INSTITUTE OF AGRICULTURAL RESEARCH STATISTICS

NATIONAL INDEX

OF

AGRICULTURAL

FIELD

EXPERIMENTS

VOL. 4 PART 1

GUJARAT

1948–53

PUBLISHED BY

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

NEW DELHI
FOREWORD

It is a well recognized fact that the level of agricultural production in India is one of the lowest in the world and it is only by the exploitation of scientific methods of agriculture that we can hope to increase our agricultural production to the level necessary for providing a reasonable standard of living to the country’s population. Properly planned and conducted field experiments provide a reliable basis for propagating improved agricultural techniques among farmers. A number of research institutes and other experimental centres are functioning under the Central Ministry of Agriculture, the Commodity Committees and the State Governments, in which research on agricultural problems is going on. The need for an integrated account of the researches done in these organisations and institutions in the country has been felt for a long time, particularly in the context of planning. The absence of such a unified account has often led to duplication of work and delay in the utilisation of the results for practical farming. The Institute of Agricultural Research Statistics of the Indian Council of Agricultural Research has, therefore, rendered a most timely service by preparing a compendium of all agricultural field experiments conducted in India up to 1953 and similar compendia are under preparation by the Institute for subsequent years.

The present compendium contains critical summaries of results of experiments bearing on important agronomic factors such as the responses of crops to fertilizers and manures, inter relationship of fertilizers, varieties and cultivation practices and other information of value for giving sound advice to farmers in different regions. I am sure that these results will be fully utilised by agricultural institutions, research workers, planners and extension organisations. The chief merit of the present publication is that it brings together in one place the results of experimentation carried out under diverse soil, climatic and agricultural conditions obtaining in India. Workers in one State can thus supplement data for their own area by results from other regions where conditions may be similar and thereby re-inforce their own conclusions. For the same reason I hope that this publication will be of use to workers in other countries also.

A Standing Committee consisting of the Agricultural Commissioner with the Government of India, the Director, Indian Agricultural Research Institute and the Statistical Adviser, Indian Council of Agricultural Research, has been set up to provide general guidance to the work under this scheme. I congratulate the members of this Committee and in particular the Statistical Adviser and his associates at the Institute of Agricultural Research Statistics for bringing out this compendium. The preparation of this compendium has been made possible only by the whole hearted co-operation of the States and other organisations in making available the results of their experimental researches for this purpose. My thanks are due to the officers of the State Departments of Agriculture and other institutions for participating in this work. I hope that the present series will be followed by periodical publication of similar compendia for later years, in order that the availability, in a consolidated form, of results of scientific experiments in agriculture in India may be maintained up-to-date.

A.D. Pandit
Vice-President,
Indian Council of Agricultural Research.

NEW DELHI,
August 20, 1962.
A large number of agricultural field experiments on different problems is being conducted in the country by Central and State Governments, Research Institutes, Commodity Committees and other organisations engaged in agricultural research. In addition, a number of schemes involving field experimentation is sponsored by the Indian Council of Agricultural Research in different States. The absence of a unified record of the results of these various experiments has considerably handicapped planning of further research and development and has often led to duplication of efforts.

Vaidyanathan brought out in 1933 a useful catalogue of manurial experiments conducted in India till then. Considering that Vaidyanathan's work was confined to manurial experiments and the fact that an enormous increase has taken place in the number and scope of agronomic experiments in recent years in India, the Indian Council of Agricultural Research launched the scheme of National Index of Field Experiments in 1954. The object of the scheme was two-fold:

(i) the preparation of compendium of all the field experiments for the period 1953-53 and

(ii) the preparation of index cards for individual experiments from 1954 onwards.

Under the scheme, results of all agricultural field experiments other than purely varietal trials were to be consolidated. Subsequently at the time of the extension of the scheme in 1959 it was decided that the compendium would be prepared in the first instance for the period 1948-53 and a similar compendium would be prepared for the period 1954-59. The present series for the period 1948-53 has been prepared in pursuance of this decision.

The compendium is divided into 15 volumes one each for (1) Andhra Pradesh (2) Assam, Manipur and Tripura (3) Bihar (4) Gujarat (5) Kerala (6) Madhya Pradesh (7) Madras (8) Maharashtra (9) Mysore (10) Orissa (11) Punjab, Jammu & Kashmir and Himachal Pradesh (12) Rajasthan (13) Uttar Pradesh (14) West Bengal and (15) all Central Institutes. In each volume background information of the respective State regarding its physical features, soils, rainfall and climate, agricultural production and area under different crops is given. A map showing different regions of the State, soils and agricultural research farms is also included. The experiments reported in each volume have been arranged cropwise for each State. All the experiments belonging to a particular crop at various research stations are grouped together. For a particular crop, experiments are arranged according to the following classification:

Manurial (M), Cultural (C), Irrigational (I), Diseases, Pests and Chemicals other than fertilisers (D), Rotational (R), Mixed Cropping (X) and combinations of these wherever they occur (e.g., CM as Cultural-cum-Manurial). Experiments in which crop varieties also form a factor are denoted by adding V to their symbol and are given together (e.g., MV as Manurial-cum-Varietal). The results of an experiment are given along with other basic information such as rotation of crops followed, cultural practices adopted, etc.

For making maximum use of the experimental data all the important tables giving the average yields of various treatments along with the appropriate standard errors have been presented. No attempt has, however, been made to summarise the data of groups of experiments on any particular item and to draw any general conclusions. This will be done for the period 1948-59 while publishing the compendium for the period 1954-59.

This publication is the result of the co-operative endeavour of a large number of persons both at the Centre and in the States. I should particularly mention in this connection, guidance and help rendered in the formulation of the scheme by Dr. D.J. Finney F.R.S. of Aberdeen University, Scotland, during his stay at the Institute of Agricultural Research Statistics as an F.A.O. Statistical Expert in 1952-53.
At the Institute of Agricultural Research Statistics, the work under the scheme was carried out under the supervision and guidance of Shri T.P. Abraham, Assistant Statistical Adviser. Shri G.A. Kulkarni, Statistician, looked after the detailed working of the scheme. These officers have been largely responsible for the preparation of the manuscript of the compendium and it is a pleasure to thank them for the hard work they have put in for getting this compendium ready. Messrs O.P. Kathuria, B.V. Srikantia, M.L. Sahni, B.P. Dyundli, S.D. Bal and P.K. Jain of the statistical staff of the Institute deserve special mention for their careful scrutiny of the data and preparation of the material for the compendium. Thanks are also due to Dr. Uttam Chand, Professor of Statistics, now with the Central Statistical Organisation, Shri K.S. Avadhany, Assistant Statistician, also now with the Central Statistical Organisation, and Shri K.C. Raut, Statistician in this office who were associated with the scheme in its initial stages.

The burden of collecting data from original records by visiting different research stations and the analysis of a large number of experiments, only the primary data for which had been recorded in the files, fell on the regional staff appointed by the Indian Council of Agricultural Research in different States. They deserve to be congratulated for the patient work they have put in. The State Departments of Agriculture, Central Institutes and Commodity Committees made data for the experiments conducted within their jurisdiction readily available. The Indian Council of Agricultural Research acknowledges this willing co-operation without which the consolidation of the results would not have been possible. Various State officers who helped the project by making the data accessible to the statistical staff of the project and worked as the regional supervisors for the scheme also deserve thanks by the Council for their active help. The list of names of the regional supervisors is given on the following page.

V.G. Panse

Statistical Adviser

Institute of Agricultural Research Statistics

(I.C.A.R.)

NEW DELHI,

August 16, 1962.
REGIONAL SUPERVISORS FOR THE SCHEME OF THE NATIONAL INDEX OF FIELD EXPERIMENTS

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<thead>
<tr>
<th>Region and headquarters</th>
<th>Regional Supervisors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Andhra Pradesh (Hyderabad)</td>
<td>SHRI D.V.G. KRISHNAMOORTHY, Deputy Director of Food Production, Andhra Pradesh. SHRI JAGANNATH RAO, Joint Director of Agriculture (Research), Andhra Pradesh. DR. KHADRUDDIN KHAN, Joint Director of Agriculture (Research), Andhra Pradesh. DR. WAHIUDDIN, Headquarters Deputy Director of Agriculture (Research), Andhra Pradesh.</td>
</tr>
<tr>
<td>2. Assam, Manipur and Tripura (Shillong)</td>
<td>SHRI L.K. HANDIQUE, Director of Agriculture, Assam. SHRI S. MAJID, Director of Agriculture, Assam. DR. S.R. BAROOHA, Director of Agriculture, Assam.</td>
</tr>
<tr>
<td>3. Bihar (Sabour)</td>
<td>DR. R. RICHARIA, Principal, Agriculture College, Sabour. SHRI R.S. ROY, Principal, Agriculture College, Sabour.</td>
</tr>
<tr>
<td>4. Kerala (Trivandrum)</td>
<td>SHRI N. SHANKARA MENON, Director of Agriculture, Kerala. SHRI P.D. NAIR, Director of Agriculture, Kerala.</td>
</tr>
<tr>
<td>5. Madhya Pradesh (Gwalior)</td>
<td>DR. T.R. MEHTA, Principal, Agriculture College, Gwalior.</td>
</tr>
<tr>
<td>6. Madras (Coimbatore)</td>
<td>SHRI C.R. SHESHADRI, Vice-Principal &amp; Secretary, Research Council, Agriculture College, Coimbatore. SHRI P.A. VENKATESWARAN, Vice-Principal &amp; Secretary, Research Council, Agriculture College, Coimbatore. LATE SHRI M. BHAVANI SANKARA RAO, Vice-Principal &amp; Secretary, Research Council, Agriculture College, Coimbatore. SHRI T. NATARAJAN, Agronomist &amp; Secretary, Research Council, Agriculture College, Coimbatore. SHRI A.H. SARMA, Extension Specialist &amp; Secretary, Research Council, Agriculture College, Coimbatore.</td>
</tr>
<tr>
<td>7. Maharashtra &amp; Gujarat (Former Bombay State) (Poona)</td>
<td>SHRI D.S. RANGA RAO, Statistician, Department of Agriculture, Poona.</td>
</tr>
</tbody>
</table>

Owing to transfers and other changes more than one Regional Supervisor have been shown against several states as these officers have acted as Regional Supervisors during different periods from 1955 to 1962.
8. **Mysore**  
    *(Bangalore)*  
    **Shri A. Anant Padmanabha Rau.**  
    State Statistican, Mysore State.

9. **Orissa**  
    *(Bhubaneshwar)*  
    **Dr. U.N. Mohanty.**  
    Dy. Director of Agriculture (H.Q.), Orissa.

10. **Punjab, Jammu & Kashmir and Himachal Pradesh (Chandigarh)**  
    **Shri P.S. Sahota,**  
    Statistician, Department of Agriculture, Punjab.

11. **Rajasthan**  
    *(Jaipur)*  
    **Shri H.C. Kothari,**  
    Statistician, Department of Agriculture, Rajasthan.

12. **Uttar Pradesh**  
    *(Lucknow)*  
    **Dr. K. Kishen,**  
    Chief Statistician to Govt. of U.P.  
    Department of Agriculture, U.P.

13. **West Bengal**  
    *(Calcutta)*  
    **Shri S.N. Mukherjee,**  
    Statistical Officer,  
    Directorate of Agriculture,  
    West Bengal.  
    **Dr. S. Basu,**  
    Statistical Officer,  
    Directorate of Agriculture,  
    West Bengal.
ABBREVIATIONS COMMON TO EXPERIMENTS ON ANNUAL AND PERENNIAL CROPS AND EXPERIMENTS ON CULTIVATORS' FIELDS

Crop :- In the top left corner is given the name of the crop on which the experiment is conducted. Within brackets along side the crop is mentioned the season wherever the information is available.

Ref :- Against the sub-title 'reference' is mentioned the name of the State, the year in which the experiment is conducted and the serial number of the experiment for that year given in brackets.

Abbreviations adopted for States are as follows :-

A.P. Andhra Pradesh  Mn. Manipur
As. Assam  Mh. Maharashtra
Bh. Bihar  Ms. Mysore
Dl. Delhi  M.P. Madhya Pradesh
Gj. Gujarat  Or. Orissa
H.P. Himachal Pradesh  Pb. Punjab
J.K. Jammu & Kashmir  Rj. Rajasthan
K. Kerala  Tr. Tripura
M. Madras  U.P. Uttar Pradesh
W.B. West Bengal

Repetition of the experiment in other years is indicated in the same line against 'reference' by stating the year and serial number for each repetition side by side e.g. U P. 53(19)/52(42)/51(20) etc.

Site :- Name of the Research Station is mentioned along with the place where it is located, e.g. Agri. Res. Stn. for Agricultural Research Station.

For Central Institutes, the corresponding standard abbreviations have been adopted e.g I.A.R.I. for Indian Agricultural Research Institute.

Type :- Abbreviations used against this item are one or more than one of the following :-

C—Cultural; D—Control of Diseases and Pests; I—Irrigational; M—Manurial; R—Rotational; V—Varietal and X—Mixed cropping e.g. CM is to be read as Cultural-cum-Manurial.

Results :- Information under this heading should be read against the following items :-

(i) General mean. (ii) S.E. per plot. (iii) Result of test of significance. (iv) Summary table(s) with S.E. of comparison(s).

Abbreviations used in the text of the experiments :-

ac.—acre.
Amm. Phos.—Ammonium Phosphate.
A/N—Ammonium Nitrate.
A/S—Ammonium Sulphate.
B.D.—Basal Dressing.
B.M.—Bone Meal.
C.L.—Cart load.
C.M.—Cattle Manure.
C/N—Chilean Nitrate.
C/S—Copper Sulphate.
F.M.—Fish Meal or Fish Manure.
F.W.C.—Farm Waste Compost.
M.C.-Municipal Compost. T.C. - Town compost.

BASAL CONDITIONS

Information under the above heading to be read against the following items:

A. For annual crops:
   (i) (a) Crop rotation if any. (b) Previous crop. (c) Manuring of previous crop. (State amount and kind).
   (ii) (a) Soil type. (b) Soil analysis. (iii) Date of sowing/planting. (iv) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing/planting. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (v) Basal manuring with time and method of application. (vi) Variety. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season (State name of the season along with the month). (x) Date of harvest.

B. For perennial crops:
   (i) History of site including manuring and other operations. (a) Soil type. (b) Soil analysis. (iii) Method of propagation of plants. (iv) Variety. (v) Date and method of sowing/planting. (vi) Age of seedling at the time of planting. (vii) Basal dressing with time and method of application. (viii) Cultural operations during the year. (ix) Inter cropping if any. (x) Irrigated or Unirrigated. (xi) Rainfall during crop season. (xii) Date of harvest.

C. For experiments on cultivators’ fields:
   (i) (a) Crop rotation if any. (b) Previous crop. (c) Manuring of previous crop. (ii) Soil type in general. (iii) Basal manuring with time and method of application. (iv) Variety. (v) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (vi) Period of sowing/planting per hold. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season. (x) Period of harvesting.

DESIGN

Information under this heading to be read against the following items:

A. For annual crops:
   (i) Abbreviations for designs: C.R.D. - Completely Randomised Design; R.B.D. - Randomised Block Design; L. Sq. - Latin Square; Conf. - Confounded; Fact. - Factorial. (other designs and modifications of the above to be indicated in full). (ii) (a) No. of plots per block. (b) Block dimensions. (iii) No. of replications. (iv) Pot size. (a) Gross. (b) Net. (v) Border or guard rows kept. (vi) Whether treatments are randomised (separately in each block).

B. For perennial crops:
   (i) Abbreviations for designs: C.R.D. - Completely Randomised Design; R.B.D. - Randomised Block Design; L. Sq. - Latin Square; Conf. - Confounded. (other designs and modifications of the above indicated in full). (ii) (i) No. of plots per block. (b) Block dimensions. (iii) No. of replications. (iv) No. of trees/plot. (v) Border or guard rows kept. (vi) Are treatments randomised.

C. For experiments on cultivators’ fields:
   (i) Method of selection of experimental sites. (ii) No. and distribution of experiments. (iii) Plot size. (a) Gross. (b) Net. (iv) Whether treatments are randomised.
GENERAL

Information under this heading to be read against the following items:

A. For annual crops:
(i) Crop conditions during growth with date of lodging, if any. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken (iv) In case of repetition in successive years—(a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places, (a) names of the places along with reference. (b) reference to combined analysis, if any. (vi) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vii) Any other important information.

B. For perennial crops:
(i) Crop condition during the year. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years—(a) from what year to what year, (b) reference to combined analysis, if any. (v) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vi) Any other important information.

C. For experiments on cultivators' fields:
(i) Crop condition during growth. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years, (a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places names of places along with reference. (vi) Abnormal occurrences, like heavy rains, frost, storm etc., if any. (vii) Any other important information.
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Crop</th>
<th>Botanical name</th>
<th>Assamese</th>
<th>Bengali</th>
<th>Oriya</th>
<th>Telugu</th>
<th>Tamil</th>
<th>Malayalam</th>
<th>Kannada</th>
<th>Marathi</th>
<th>Gujarati</th>
<th>Hindi</th>
<th>Punjabi &amp; Kathmiritri</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Paddy</td>
<td>Oryza sativa L.</td>
<td>Dhan</td>
<td>Dhan</td>
<td>Dhano</td>
<td>Vadlu</td>
<td>Bomalu</td>
<td>Nel</td>
<td>Bhatta</td>
<td>Bhat</td>
<td>Dangar</td>
<td>Shali</td>
<td>Kanak</td>
</tr>
<tr>
<td>2.</td>
<td>Wheat</td>
<td>Triticum Sativum Lamk.; Triticum aestivum L.</td>
<td>Gaum; Ghehu</td>
<td>Gam</td>
<td>Gabam</td>
<td>Godamu</td>
<td>Godhumal</td>
<td>Kothumai</td>
<td>Gothambu</td>
<td>Godhi</td>
<td>Gahu</td>
<td>Ghahu</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Bajra</td>
<td>Pennisetum typhoides stapf Ex Hubbard</td>
<td>Bajra</td>
<td>Bajra</td>
<td>Sajja</td>
<td>Kambu</td>
<td>Kambu</td>
<td>Sahi</td>
<td>Bajri</td>
<td>Bajri</td>
<td>Bajri</td>
<td>Bajra</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Maize</td>
<td>Zea mays L.</td>
<td>Gom-dhan</td>
<td>Butta</td>
<td>Bhatta</td>
<td>Makka</td>
<td>Makka</td>
<td>Musukina</td>
<td>Makka</td>
<td>Makki</td>
<td>Makkai</td>
<td>Makka</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Gram</td>
<td>Cicer arietinum L.</td>
<td>Chola</td>
<td>Hoot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Chola</td>
<td>Barbara</td>
<td>Chana</td>
<td>Chana</td>
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<tr>
<td>7.</td>
<td>Chilamang</td>
<td>Puccellia aurica Roxb.</td>
<td>Magumul</td>
<td>Sonamul</td>
<td>Mone</td>
<td>Pachapenul</td>
<td>Penulul</td>
<td>Kadayalu</td>
<td>Chalada</td>
<td>Harbara</td>
<td>Chana</td>
<td>Chana</td>
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<tr>
<td>8.</td>
<td>Uddi</td>
<td>Puccellia mangor var. radiatae Linn.</td>
<td>Matimul</td>
<td>Meshkula</td>
<td>Biri</td>
<td>Mu unulu</td>
<td>Unshundu</td>
<td>Shundu</td>
<td>Uddu</td>
<td>Udud</td>
<td>Uddad</td>
<td>Urd</td>
<td>Mash; Uddad</td>
</tr>
<tr>
<td>10.</td>
<td>Wal</td>
<td>Dolichos lablab L.</td>
<td>Latchi</td>
<td>Latchi</td>
<td>Latchi</td>
<td>Latchi</td>
<td>Latchi</td>
<td>Latchi</td>
<td>Latchi</td>
<td>Latchi</td>
<td>Latchi</td>
<td>Latchi</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Lang</td>
<td>Lathyrus Sativus L.</td>
<td>Khesari</td>
<td>Khesari</td>
<td>Khesari</td>
<td>Khesari</td>
<td>Khesari</td>
<td>Khesari</td>
<td>Khesari</td>
<td>Khesari</td>
<td>Khesari</td>
<td>Khesari</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Sugarcan</td>
<td>Saccharum officinarum L.</td>
<td>Kahar</td>
<td>Akh</td>
<td>Akh</td>
<td>Cherdin</td>
<td>Karum</td>
<td>Karum</td>
<td>Kellar</td>
<td>Kbell</td>
<td>Osu</td>
<td>Sherdi</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Groundnut</td>
<td>Arachis hypogaea L.</td>
<td>Chinu</td>
<td>Chinu</td>
<td>Chinu</td>
<td>Nelayanu</td>
<td>Nelayanu</td>
<td>Nelayanu</td>
<td>Kadaloe</td>
<td>Kadaloe</td>
<td>Kadaloe</td>
<td>Kadaloe</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Chiku</td>
<td>Adina Sativula L.</td>
<td>Sapota</td>
<td>Sapota</td>
<td>Sapota</td>
<td>Sapota</td>
<td>Sapota</td>
<td>Sapota</td>
<td>Sapota</td>
<td>Chikho</td>
<td>Chikho</td>
<td>Chikho</td>
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GUJARAT STATE

1. GENERAL.

The present Gujarat State came into existence on 1st May 1960 as result of bifurcation of the erst-while Bombay State into two states of Maharashtra & Gujarat. The State comprises of the 17 districts of Banaskantha, Mehsana, Sabarkantha, Ahmedabad, Kaira, Panch Mahals, Baroda, Broach, Surat, Dangs, Amreli, Surendranagar, Rajkot, Jamnagar, Junagadh, Bhavnagar & Kutch. The State is bound by Rajasthan and West Pakistan on north, on east by Madhya Pradesh, on south by Maharashtra state and on west by Arabian Sea. The State has an area of 72,403 square miles (or 46.4 million acres). The area according to village papers (reporting area) is 44.9 million acres. The utilization of land area is as follows: (figures for 1956-57 for reporting area)

<table>
<thead>
<tr>
<th>Description</th>
<th>Acres (000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Land not available for cultivation.</td>
<td>12,986</td>
</tr>
<tr>
<td>(2) Forests.</td>
<td>2,109</td>
</tr>
<tr>
<td>(3) Permanent pastures.</td>
<td>2,281</td>
</tr>
<tr>
<td>(4) Area under miscellaneous tree crops not included in net area sown.</td>
<td>1,177</td>
</tr>
<tr>
<td>(5) Culturable waste.</td>
<td>1,202</td>
</tr>
<tr>
<td>(6) Fallow lands other than current fallows.</td>
<td>634</td>
</tr>
<tr>
<td>(7) Current fallows.</td>
<td>1,113</td>
</tr>
<tr>
<td>(8) Net area sown.</td>
<td>22,630</td>
</tr>
<tr>
<td>(9) Total cropped area.</td>
<td>23,680</td>
</tr>
<tr>
<td>(10) Area sown more than once.</td>
<td>1,050</td>
</tr>
</tbody>
</table>

2. PHYSICAL FEATURES, RAINFALL AND CLIMATE

Physiographically the state lies in Gujarat-Kathiawar sub-region in the Western Ghats and the coastal region. In this sub-region are included the northern divisions of the Bombay State to the north of the Damanganga river and comprises of the whole of Gujarat, Saurashtra and Kutch. The north-eastern high land regions consist of those portions of the Satpuras, the Vindhyas and the Gujarat-Malwa Hill ranges which focus the drainage of the eastern part of this sub-region on to the Gulf of Cambay by a fan of major rivers the most famous of which are the Nerbada and the Tapti. 90% of the rainfall of this area occurs during the south-west monsoon season, viz, June to September. The southern Gujarat plain and the Tapti valley receive a moderate rainfall of 30" to 40" but towards the Satpura and the north-east high lands there is an increase due to relief. Further north in Gujarat there is a steady decline from 40" to 25" and along the Saurashtra coast it is only 20". Kutch is practically a semi-desert with less than 20" of rainfall.

The cold weather season commences in December and lasts till February or March. During this season the dry continental air from the north prevails over the sub-region and skies are generally clear except when in association with western disturbances, brief spells of cloudy weather prevail. January, February and March are marked by heavy dew and thick fog in the early mornings. The average early morning temperature is between 50° and 60°F and January is generally the coldest month when on occasions temperatures near the freezing point have been recorded. Deesa has once recorded a temperature of 28°F in January and Baroda, Rajkot and Dohad are other places in the area where the lowest temperature recorded has been 32°F or less.
March to May is a season of continuous increase of temperature and the days become oppressively hot. The maximum day temperature ranges between 85° and 108° F except in the Saurashtra coast where it ranges between 85° and 90° F. On individual days a temperature as high as 122° F has been recorded at Deesa during the month of May and Ahmedabad, Bhuj and Rajkot have seen 118° F during the same month. Thundershovers may occur 1-2 days during the whole season but the amount of rain received is very little. Winds are west to north-west only in March and April and south-west to west only in May and are stronger in the afternoons.

The south-west monsoon advances into this area by about the third week of June and withdraws by about the third week of September. July is the rainiest month. Monsoon is active in July and August during which months depressions travel west to north-west from the north of the Bay of Bengal and give very heavy rain. Table 1 gives the seasonwise distribution of rainfall in different regions of Gujarat State.

**TABLE 1**

<table>
<thead>
<tr>
<th>Regions</th>
<th>Monsoon (June to Sept.)</th>
<th>Post monsoon (Oct to Dec.)</th>
<th>Winter (Jan. to Feb.)</th>
<th>Pre-monsoon (March to May)</th>
<th>Total for the year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bombay—Gujarat division</td>
<td>31.02</td>
<td>1.86</td>
<td>—</td>
<td>0.33</td>
<td>33.21</td>
</tr>
<tr>
<td>2. Saurashtra division</td>
<td>19.67</td>
<td>0.85</td>
<td>—</td>
<td>0.6</td>
<td>21.18</td>
</tr>
<tr>
<td>3. Kutch division</td>
<td>12.44</td>
<td>0.47</td>
<td>0.12</td>
<td>0.3</td>
<td>13.6</td>
</tr>
<tr>
<td>State (simple average)</td>
<td>21.11</td>
<td>1.06</td>
<td>0.04</td>
<td>0.40</td>
<td>22.61</td>
</tr>
<tr>
<td>1' =25.4 mm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The districts in Bombay—Gujarat division are—Surat, Broach, Baroda, Panch Mahals, Banaskantha, Sabarkantha, Mehsana, Ahmedabad, Kaira and Amreli; in Saurashtra division are—Halar, Central Saurashtra, Zalawad, Gohilwad and Sorath and in Kutch division—Kutch.

3. SOILS

**Bombay—Gujarat Division.** A strip of alluvium soil about 13 to 15 miles wide is found along the coast of Surat and Broach districts, but most of the Broach and Surat districts is covered by deep black soil from trap, as in the western portion of Ahmedabad districts. The soils in Broach are alluvial and deep. The prevailing soil in Surat is deep black cotton soil, though there are also typical light *gorat* soils. The northern part of Ahmedabad, the eastern portion of Mehsana, and most of Kaira, Baroda and Amreli districts are covered by sandy soil from older alluvium, locally known as *gorat* or *gorat*.<br>

The alluvial *gorat* soil of the Indo-Gangetic type found in Ahmedabad is very deep, grey to light brown in colour. In Baroda, Mehsana and Amreli, the soil is mainly alluvial. The main types distinguished are the deep black cotton heavy soils, the light coloured sandy *gorat* soil, and the *basar* or mixed soils. In the valleys of Panch Mahals district the soil is dark coloured loam which is fairly deep and fertile.

**Saurashtra Division.** Black cotton and red soil predominates in Saurashtra. A strip of coastal alluvium 5 to 10 miles wide is found along the east and south coast. *Bij* or mixed soils of black and *gorat* are distributed widely in Saurashtra. These soils exhibit great variety in their chemical and mechanical composition. Coarse sandy soils of light colour is found in parts of Zalawad along the Kanh of Kutch.

**Kutch Division.** The surface soils are generally brown or brownish black, and are of alluvial character with clayey or silty clay texture. The high salt content of the soil is responsible for the barren-ness of the tract.
4. IRRIGATION

The state has nearly 1.36 million acres irrigated. The area irrigated by different sources is given below:

<table>
<thead>
<tr>
<th>Source</th>
<th>Area (000 acres)</th>
<th>% of total irrigated area</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Government Canals</td>
<td>130</td>
<td>9.61</td>
</tr>
<tr>
<td>(2) Private Canals</td>
<td>1</td>
<td>0.07</td>
</tr>
<tr>
<td>(3) Tanks</td>
<td>69</td>
<td>5.10</td>
</tr>
<tr>
<td>(4) Wells</td>
<td>1128</td>
<td>83.37</td>
</tr>
<tr>
<td>(5) Other sources.</td>
<td>25</td>
<td>1.85</td>
</tr>
</tbody>
</table>

Total. 1353 100.00

5. AGRICULTURAL PRODUCTION AND NORMAL CROPPING PATTERN.

Jowar, Wheat, Bajra, Paddy and pulses are the principal crops of the State. Gorat (i.e. red and black type of soil) is usually suitable for Jowar, Bajra, Cotton and pulses, etc., Kyari i.e. black and muddy type soil is retentive of moisture and grows rice in Kharif after which Rabi crops are taken. The area, production and yield per acre are given in table below:

<table>
<thead>
<tr>
<th>Crops</th>
<th>Area (000 acres)</th>
<th>Production (000 tons)</th>
<th>Yield lb/ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Jowar</td>
<td>3,483</td>
<td>398</td>
<td>256</td>
</tr>
<tr>
<td>(2) Bajra</td>
<td>4,095</td>
<td>677</td>
<td>370</td>
</tr>
<tr>
<td>(3) Rice.</td>
<td>1,158</td>
<td>437</td>
<td>845</td>
</tr>
<tr>
<td>(4) Wheat</td>
<td>1,003</td>
<td>314</td>
<td>701</td>
</tr>
<tr>
<td>(5) Pulses</td>
<td>1,151</td>
<td>157</td>
<td>306</td>
</tr>
<tr>
<td>(6) Groundnut.</td>
<td>3,260</td>
<td>1,125</td>
<td>773</td>
</tr>
<tr>
<td>(7) Other oilseeds.</td>
<td>682</td>
<td>74</td>
<td>243</td>
</tr>
<tr>
<td>(8) Cotton. @</td>
<td>4,565</td>
<td>1,297</td>
<td>111</td>
</tr>
</tbody>
</table>

@ Production in '000 bales of 39 each.

6. AGRICULTURAL EXPERIMENTATION AND RESEARCH FARMS.

Research on field crops is directed towards genetic improvement leading to evolution of high yielding, disease resistant strains of superior quality. At the same time agronomic aspects are studied and standard agricultural practices are evolved leading to higher yields.

There were 17 research farms which reported experiments on agronomic problems. Medium black, deep black, sandy loam, loamy, clayey loam are the types of the soils found in these stations. The research stations at Amreli and Surat are the principal stations. The Dohad farm is the oldest.

Maximum number of experiments was reported from the Surat farm. The next in order was the Amreli farm. At both of these stations the major crops on which the experiments are carried out are Jowar, Bajra, Wheat & Cotton. Experimentation on Jowar, Wheat & Cotton is carried out at almost all the farms. Farms at Bulsar, Dabhoi, Nawa- gaon, Vyara & Waghai conduct experiments on Paddy.
7. EXPERIMENTS

There were in all 198 experiments reported for the period 1948-53 from the Gujarat region. The distribution of these experiments according to crops and types of treatments tried is given in table below:

**TABLE 4.**

<table>
<thead>
<tr>
<th>Crop</th>
<th>M</th>
<th>C</th>
<th>CV</th>
<th>CM</th>
<th>I</th>
<th>IM</th>
<th>D</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy</td>
<td>18</td>
<td>13</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>Wheat</td>
<td>7</td>
<td>18</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>Jowar</td>
<td>31</td>
<td>5</td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Bajra</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Maize</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Pulses</td>
<td>22</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Cotton</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Groundnut</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Mixed Cropping</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Rotational</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Chikoo</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>44</td>
<td>4</td>
<td>13</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>198</td>
</tr>
</tbody>
</table>

It can be seen from the above table that maximum number of experiments (22%) carried out were on Jowar crop which is major crop of the state and occupies nearly 8.5 million acres. Next in order is paddy crop, nearly 18% of the experiments being carried out on this crop which occupies about 1 million acres. Bajra which has nearly 4 million acres under it has only 10 experiments out of 198.

Nearly 58% of the experiments conducted are purely manurial and 23% are purely cultural. Considering individual crops it is seen that majority belongs to the manurial type of experiments.

Manurial experiments commonly found were to study the effect of application of $P_2O_5$ to leguminous crops on the succeeding cereal crops like Jowar, Wheat and Bajra. Leguminous crops were Groundnut, Udid and Gram. The rate of application of $P_2O_5$ as super varied from 50 lb./ac. to 150 lb./ac. Among the experiments usually found were to study the effects of N and P alone and in combination. The levels of N and P besides control varied from 15 lb./ac. to 64 lb./ac. to different cereal crops. The sources of N usually were A.S., G.N.C. and their mixture. The source of $P_2O_5$ was invariably super. Sometimes Farm Yard Manure also formed one of the factors along with N and P. The rate of application of F.Y.M. varied from 5 to 10 C.L./ac. to cereal crops.

The design usually adopted was in randomised blocks. The number of plots per block varied from 4 to 16. Split-plot design was next variety of design adopted for cultural type of experiments as well as for manurial-cum-cultural experiments. Number of main plots per replication varied from 2 to 6 and number of sub-plots per main-plot varied from 3 to 9. Number of replications varied from 2 to 6.

The gross plot size in a randomised block design varied from 1/100th of an acre to 1/35rd of an acre.
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the experimental station, location, year of establishment, tract it represents and major crops.</th>
<th>Soil type and soil analysis.</th>
<th>Normal rainfall in inches</th>
<th>Irrigation facilities</th>
<th>No. of experiments</th>
<th>General description of topography of experimental area.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total 15.31</td>
<td></td>
<td>Total - 29</td>
<td></td>
</tr>
</tbody>
</table>

Figure for the year 1959-1960.

(1) Soil type : Medium black to deep black.
(2) Depth : 2' to 3'. (3) Colour : Dark black to black.
(4) Structure : Clayey.
(5) Soil analysis :
   (i) Chemical analysis :

<table>
<thead>
<tr>
<th>Depth</th>
<th>CaCO₃</th>
<th>pH</th>
<th>Ca</th>
<th>Mg</th>
<th>Na</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9'</td>
<td>0.29</td>
<td>10.0</td>
<td>8.55</td>
<td>25.00</td>
<td>2.50</td>
</tr>
<tr>
<td>9'-18'</td>
<td>0.36</td>
<td>10.4</td>
<td>8.75</td>
<td>22.00</td>
<td>8.50</td>
</tr>
</tbody>
</table>

(II) Mechanical analysis :

<table>
<thead>
<tr>
<th>Depth</th>
<th>Silt</th>
<th>Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9'</td>
<td>28.25</td>
<td>88.00</td>
</tr>
<tr>
<td>9'-18'</td>
<td>16.00</td>
<td>40.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NIL</td>
<td>3.93</td>
<td>6.55</td>
<td>7.81</td>
<td>5.22</td>
<td>0.68</td>
<td>0.06</td>
<td>0.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NIL</td>
<td>0.12</td>
<td>—</td>
<td>0.11</td>
<td>0.31</td>
<td>0.29</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>TOTAL</th>
<th>1946—57.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of 10 years</td>
<td>25.10</td>
<td></td>
</tr>
</tbody>
</table>

There is variation of soils from plot to plot. The soils are lighter on the western side of the farm than on eastern side.
### STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

**GUJARAT STATE (Contd.)**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Baroda: Agri. School and Res. Stn.</td>
<td>1. Broad soil type: Deep black and medium black.</td>
<td>June</td>
<td>5.37</td>
<td>Irrigation by well. There are 3 wells installed with electric motor pumps for irrigation facilities available from 1936. The soil is well drained.</td>
<td>Bajra-2.</td>
<td>The area of the farm land is 106 acres of which 84 acres are generally kept under cultivation, and rest under roads, buildings etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>July</td>
<td>12.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aug.</td>
<td>18.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sept.</td>
<td>9.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oct.</td>
<td>2.65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nov.</td>
<td>0.17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dec.</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jan.</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feb.</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>March</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>April</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>May</td>
<td>0.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>49.98</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|   |   |   | July | 10.51 |   | Wheat-4 |   |
|   |   |   | Aug. | 15.21 |   | Chinamug-5 |   |
|   |   |   | Sept. | 6.27 |   | Lang-1 |   |
|   |   |   | Oct. to May | Nil | Total | Mixed cropping-2 |   |
|   |   |   |   |   |   | Total | 18 |
|   |   | Total | 32.00 |   |   |   |   |

<p>|   |   |   |   |   | Gram-3 |   |
|   |   |   |   |   | Wal-3 |   |
|   |   |   |   |   | Total | 18 |   |</p>
<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS</strong></td>
<td><strong>GUJARAT STATE</strong> (Contd.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moisture</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
</tr>
<tr>
<td>3.50</td>
<td>8.34</td>
<td>0.034</td>
<td>0.74</td>
<td>2</td>
<td>3</td>
<td>1.1</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>Calcium</td>
<td>Mg Na and K&lt;sub&gt;2&lt;/sub&gt;O.</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.03</td>
<td>0.74</td>
<td>2</td>
<td>3</td>
<td>1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available P&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;5&lt;/sub&gt; (mg)</td>
<td>Soluble salts</td>
<td>Soluble salts</td>
<td>Soluble salts</td>
<td>Soluble salts</td>
<td>Soluble salts</td>
<td>Soluble salts</td>
</tr>
<tr>
<td>19.20</td>
<td>0.11</td>
<td>7.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available K&lt;sub&gt;2&lt;/sub&gt;O (mg)</td>
<td>pH value</td>
<td>pH value</td>
<td>pH value</td>
<td>pH value</td>
<td>pH value</td>
<td>pH value</td>
</tr>
<tr>
<td>28.09</td>
<td>0.02</td>
<td>75</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ca CO&lt;sub&gt;3&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>00.15</td>
<td>5.73</td>
<td>1.66</td>
<td>4.33</td>
<td>2.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
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</tr>
<tr>
<td>37.20</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6.56</td>
<td>4.62</td>
<td>7.03</td>
<td>12.39</td>
<td>4.50</td>
<td>0.10</td>
<td>Nil</td>
</tr>
<tr>
<td>Irrigation facilities available from 1938-1939 from Canal. There is no special drainage system but when needed it is to be excavated during the monsoon for removing the water from the low lying area.</td>
<td>Paddy</td>
<td>Jowar</td>
<td>Cotton</td>
<td>Mixed cropping</td>
<td>Total</td>
<td>10</td>
</tr>
<tr>
<td>This farm is little bit on low lying side and being black in nature it takes a long duration for Vapasa condition.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
<td>pH Total salts CaCO&lt;sub&gt;3&lt;/sub&gt;</td>
</tr>
<tr>
<td>8.34</td>
<td>0.034</td>
<td>0.74</td>
<td>2</td>
<td>3</td>
<td>1.1</td>
<td>14.43</td>
</tr>
<tr>
<td>Calcium</td>
<td>Mg Na and K&lt;sub&gt;2&lt;/sub&gt;O.</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.74</td>
<td>2</td>
<td>3</td>
<td>1.1</td>
<td></td>
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<tr>
<td>Total</td>
<td></td>
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</tr>
<tr>
<td>14.43</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>0.07</td>
<td>5.73</td>
<td>1.66</td>
<td>4.33</td>
<td>2.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No irrigation facilities and no drainage system.</td>
<td>Groundnut</td>
<td>Bajra</td>
<td></td>
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</tr>
<tr>
<td>STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>GUJARAT STATE (Contd.)</td>
<td></td>
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</tbody>
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<tr>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Soil colour</strong>: Light brown and medium black.</td>
<td><strong>Structure</strong>: Partly stony.</td>
<td><strong>Soil analysis</strong>: (Refer page 14)</td>
<td><strong>Soil analysis</strong>:</td>
<td>-</td>
<td><strong>June</strong>: 4.65</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td><strong>Aug.</strong>: 9.26</td>
</tr>
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<td></td>
<td><strong>Oct.</strong>: 3.35</td>
</tr>
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<td></td>
<td><strong>Dec.</strong>: 0.02</td>
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<td></td>
<td><strong>Feb.</strong>:</td>
</tr>
<tr>
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<td></td>
<td></td>
<td><strong>April</strong>: 0.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Total</strong>: 37.75</td>
</tr>
</tbody>
</table>

| **Gandev. Fruit Res. Stn.** | **Distt. Surat.**, situated at a distance of about 1½ miles from Gandevi town. **Year of establishment**: 1937-1938. It represents the entire fruit crop area of gorudu type. | **Major crops**: Mango and chikoo fruit crops. | **Soil type**: Old alluvium. | **Depth**: 20'. | **Colour**: Gorudu. |
| **Structure**: Hard. | **Soil analysis**: |- | **Chemical analysis**: (percent) | **N** | **P₂O₅** | **Total K₂O** | **Organic matter** |
| | | | | **0.01** | **0.05** | **0.04** | **0.057** |
| | | | | | | | |
| | | | | | **Mechanical analysis (percent)** | **Total**: 67.5 | **Average over 9 years**: 1950-51 to 1958-59. |
| | | | | | **Course sand**: 2.52 | **Silt Clay CaCO₃ S.T.S.S.** |
| | | | | | **sand sand sand sand**: | **63.83 14.72 71.00 Nil 0.04** | **Information not available.** |

<table>
<thead>
<tr>
<th><strong>Wheat</strong></th>
<th><strong>Groundnut</strong></th>
<th><strong>Maize</strong></th>
<th><strong>Mixed cropping</strong></th>
<th><strong>Chikoo</strong></th>
<th><strong>N.A.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>No proper drainage system.</strong></td>
</tr>
</tbody>
</table>

In **Rabi season there is irrigation. Facilities available since inception. Water drain surrounding the plots have been dug but there is no mechanical arrangement on this side.**
### STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

**GUJARAT STATE (Contd.)**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</thead>
<tbody>
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<td>1</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td></td>
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<td></td>
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<tr>
<td>3</td>
<td></td>
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<tr>
<td>4</td>
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<td>5</td>
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<td>6</td>
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<tr>
<td>7</td>
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</tr>
</tbody>
</table>


14 miles from Harij Rly. Stn. Year of establishment 1911—12. It represents sandy loam soil having salt content to considerable amount.

**Major crops:** Kharif : Bajra, Jowar and Udid. Rabi : Wheat and Gram

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.04</td>
<td>3.94</td>
<td>2.24</td>
<td>5.42</td>
<td>0.98</td>
<td>0.15</td>
<td>Nil</td>
</tr>
</tbody>
</table>

**Soil type:** Sandy loam.

**Depth:** 10-15 ft.

**Colour:** Brownish white.

**Structure:** Loamy.

**Soil analysis:** Not available.

<table>
<thead>
<tr>
<th>(i) Chemical analysis (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.S. CaCO\textsubscript{2}</td>
</tr>
<tr>
<td>0.19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(ii) Mechanical analysis (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse sand</td>
</tr>
<tr>
<td>2.9</td>
</tr>
</tbody>
</table>

**No irrigation facilities.**

**The experimental area is divided by 5 big drains and sub-drains to leach out the salts.**

**Total 13.77**

**Figures for the year 1958-1959.**


**Major crops:** Jowar, Bajra, Cotton, Vegetables and Wheat.

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.7</td>
<td>19.2</td>
<td>4.7</td>
<td>8.5</td>
<td>3.5</td>
<td>0.1</td>
<td>42.6</td>
</tr>
</tbody>
</table>

**Groundnut 4**

**The plots are more or less leveled.**

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19.2</td>
<td>4.7</td>
<td>8.5</td>
<td>3.5</td>
<td>0.1</td>
<td>0.15</td>
<td>Nil</td>
<td>13.77</td>
</tr>
</tbody>
</table>

The experimental area is normally levelled and having slopes to some extent on Southern side.
## STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

### GUJARAT STATE  (Contd.)

<table>
<thead>
<tr>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of establishment : 1895. Major crops : Cotton, Jowar, Tur and Til.</td>
<td>Depth : 4' to 6'.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>It represents black cotton soil tract.</td>
<td>Colour : Black with sticky yellow sub-soil.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Structure : Clay silt (62%).</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Soil analysis :</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(i) Chemical analysis : (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>P2O5</td>
<td>K2O</td>
<td>CaO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.023 to 0.043</td>
<td>0.051</td>
<td>0.0263 to 0.610</td>
<td>0.19 to 1.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii) Mechanical analysis :</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Soil surface</td>
<td>Clay and silt</td>
<td>Fine sand</td>
<td>Stone, sand &amp; gravel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9&quot;</td>
<td>62%</td>
<td>35%</td>
<td>3%</td>
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</tr>
<tr>
<td></td>
<td>Information not available.</td>
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</tr>
<tr>
<td></td>
<td>June 5.96</td>
<td>Irrigation from Kakrapora</td>
<td>Jowar—24</td>
<td>Information not available.</td>
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<tr>
<td></td>
<td>July 13.53</td>
<td>canal from 1958—59. The soil is properly drained.</td>
<td>Tur — 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aug. 9.32</td>
<td></td>
<td>Cotton — 8</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Sept. 13.30</td>
<td></td>
<td>Mixed cropping</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Oct. 1.09</td>
<td></td>
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<tr>
<td></td>
<td>Nov. 0.03</td>
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<td>Dec. 0.16</td>
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<tr>
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<td>Jan. 0.01</td>
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<tr>
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<td>Feb. 0.01</td>
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<tr>
<td></td>
<td>Mar. 0.08</td>
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<tr>
<td></td>
<td>April 0.00</td>
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<td></td>
<td>May 0.23</td>
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<td></td>
<td>Total 43.72</td>
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<td></td>
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</tr>
<tr>
<td>No.</td>
<td>Station</td>
<td>Year of Establishment</td>
<td>Major Crops</td>
<td>Soil Type</td>
<td>Depth</td>
<td>Colour</td>
</tr>
<tr>
<td>-----</td>
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<td>----------------------</td>
<td>-------------</td>
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</tr>
<tr>
<td>11</td>
<td>Vapiur: Agri. Res. Sta. Dists. Mehsana, near Vapiur Railway Station.</td>
<td>1944</td>
<td>Wheat, Bajra, Pulses and Cotton</td>
<td>Sandy soil</td>
<td>60 cm</td>
<td>Brown</td>
</tr>
<tr>
<td>12</td>
<td>Yiramgam: Agril. Res. Sta. Dists. Ahmedabad, 12 miles from Yiramgam Rly Stn. Year of establishment: 1922. It represents North Gujarat tract.</td>
<td>1922</td>
<td>Cotton, Bajra, Jowar, Wheat etc.</td>
<td>Clay, medium, black and varying much in depth</td>
<td>40&quot;</td>
<td>Greyish black (kali-basar)</td>
</tr>
</tbody>
</table>
### STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS
**GUJARAT STATE** (Contd.)

<table>
<thead>
<tr>
<th>Soil depth</th>
<th>pH</th>
<th>Total soluble salts</th>
<th>Calcium carbonate</th>
<th>Exchangeable bases in milli-equivalents</th>
<th>Organic carbon</th>
<th>Total Nitrogen</th>
<th>Available P₂O₅ mg</th>
<th>C/N ratio</th>
<th>Mechanical composition</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0&quot;—13&quot;</td>
<td>8.53</td>
<td>0.15</td>
<td>11.2</td>
<td>22.0</td>
<td>3.0</td>
<td>1.5</td>
<td>0.408</td>
<td>0.056</td>
<td>10.92</td>
<td>7.3</td>
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<tr>
<td>13&quot;—23&quot;</td>
<td>8.61</td>
<td>0.19</td>
<td>15.6</td>
<td>28.5</td>
<td>4.5</td>
<td>1.0</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>23&quot;—32&quot;</td>
<td>8.66</td>
<td>0.19</td>
<td>15.2</td>
<td>29.5</td>
<td>5.0</td>
<td>1.0</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>32&quot;—42&quot;</td>
<td>8.61</td>
<td>0.15</td>
<td>28.8</td>
<td>20.5</td>
<td>5.0</td>
<td>1.0</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>42&quot;—50&quot;</td>
<td>8.63</td>
<td>0.11</td>
<td>32.8</td>
<td>18.5</td>
<td>4.0</td>
<td>0.5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>


   1. Soil type: Black cotton.
   2. Depth: 0—12" and 0—18".
   5. Soil analysis:
      (i) Chemical analysis: N.A.
         Lime: 2.0 to 5.0 %
         P₂O₅: 0.005 to 0.01 %
         K₂O: 0.02 to 0.06 %
      (ii) Mechanical analysis: Not available

   June: 4.26
   July: 34.54
   Aug.: 26.73
   Sept.: 22.17
   Oct.: 0.35
   Nov.: 0.40
   Dec.: Nil
   March: Nil
   April: 0.8
   May: 0.22

   Total: 88.75

   Figures for the year 1958 (Jan.-Dec.).
   Sugarcane — 6
   Paddy — 5
   Total — 11

   Irrigation facilities available from the beginning of the farm. No drainage system.

   The site of the farm is in general rectangular. A slight slope from west to east. There is no variation in soil except that some western part of the farm is stoney.


   1. Soil type: Black and light brownish soil.
   2. Other details not available.

   Information: N.A.
   No irrigation.

   Paddy — 3
   N.A.
### Agricultural Research Station, Amreli (Soil Analysis Report)

**Description**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stones</strong></td>
<td>6.22</td>
<td>6.86</td>
<td>6.75</td>
</tr>
<tr>
<td><strong>Moisture</strong></td>
<td>8.44</td>
<td>10.64</td>
<td>9.42</td>
</tr>
<tr>
<td><strong>Loss on ignition (excluding moisture)</strong></td>
<td>6.28</td>
<td>7.34</td>
<td>8.74</td>
</tr>
<tr>
<td><strong>Calcium Carbonate (CaCO₃)</strong></td>
<td>5.80</td>
<td>5.00</td>
<td>5.60</td>
</tr>
<tr>
<td><strong>Nitrogen</strong></td>
<td>0.08</td>
<td>0.09</td>
<td>0.08</td>
</tr>
</tbody>
</table>

**Mechanical analysis**

<table>
<thead>
<tr>
<th>(i) (coarse sand)</th>
<th>10.94</th>
<th>17.76</th>
<th>13.24</th>
<th>10.92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine sand (by diff.)</td>
<td>15.46</td>
<td>27.12</td>
<td>29.56</td>
<td>23.20</td>
</tr>
<tr>
<td>Silt</td>
<td>24.80</td>
<td>37.72</td>
<td>36.20</td>
<td>31.06</td>
</tr>
<tr>
<td>Clay</td>
<td>40.80</td>
<td>22.40</td>
<td>21.60</td>
<td>34.40</td>
</tr>
</tbody>
</table>

**Available phosphoric acid (P₂O₅)**

| A | 12.00 | 12.00 | 12.00 | 12.00 |
| B | 11.00 | 20.00 | 22.00 | 8.00 |

**pH value**

| A | 8.30 | 8.30 | 8.59 | 8.60 |
| B |       |      |      |      |

**Water analysis report**

**Well Water, 'A'**

| Sol. salts | 67.60 |       |       |       |
| Sodium carbonate (Na₂CO₃) | 3.45 |       |       |       |
| Calcium carbonate (CaCO₃) | 26.63 |       |       |       |
| Magnesium carbonate (Mg CO₃) | 6.38 |       |       |       |
| Magnesium Sulphate (Mg SO₄) | 12.50 |       |       |       |
| Magnesium chloride (Mg Cl₂) |       |       |       |       |
| Sodium chloride | 17.23 |       |       |       |
| pH value | 8.75 |       |       |       |

**Well Water, 'B'**

| Total exchangeable bases sum of the above | 19.03 | 22.18 | 24.37 | 25.34 |
| pH value | 7.80 | 7.69 | 7.89 | 7.80 |

### Agricultural Research Station, Dohad (Results of soil analysis)

**Chemical Analysis**

<table>
<thead>
<tr>
<th>Percentage of different constituents analysed for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth in inches</td>
</tr>
<tr>
<td>Moisture</td>
</tr>
<tr>
<td>Loss on ignition (excluding moisture)</td>
</tr>
<tr>
<td>CaCO₃</td>
</tr>
<tr>
<td>Total K₂O</td>
</tr>
<tr>
<td>Total P₂O₅</td>
</tr>
<tr>
<td>Total N</td>
</tr>
<tr>
<td>Available K₂O</td>
</tr>
<tr>
<td>Available P₂O₅</td>
</tr>
</tbody>
</table>

[Mill equivalent percent]

| Exchangeable Ca | 14.00 |       |       |       |
| Exchangeable Mg | 2.00 | 3.79 | 4.00 | 2.30 |
| Exchangeable Na | 2.30 | 1.70 | 1.30 | 1.30 |
| Exchangeable K | 0.79 | 0.68 | 0.56 | 1.34 |

| Total exchangeable bases sum of the above | 19.03 | 22.18 | 24.37 | 25.34 |
| pH value | 7.80 | 7.69 | 7.89 | 7.80 |

**Mechanical analysis**

| Depth in inches | 0--4" | 4--11" | 11--21" | 21--40" |
| Moisture | 1.71 | 1.86 | 2.36 | 2.58 |
| Carbonates (CaCO₃) |       |       |       |       |
| Organic matter | 5.9% | 5.67 | 5.54 | 6.07 |
| Clay | 30.73 | 25.75 | 23.00 | 33.75 |
| Silt | 17.40 | 21.50 | 18.30 | 21.50 |
| Fine sand (estimated by difference) | 41.26 | 43.22 | 36.20 | 33.57 |
| Coarse sand | 3.30 | 2.00 | 2.30 | 3.03 |
Crop :- Paddy (Kharif)


Object :- To study the N and P₂O₅ requirements of Paddy (with a basal dose of F.Y.M.).

1. BASAL CONDITIONS :
   (i) (a) N.A. (b) Groundnut-Bajra. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 19.7.1953. (iv) (a) N.A. (b) Drilling. (c) 34 lb./ac. (d) between rows-18"; between plants-irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. was spread on 16.5.1950. (vi) Local (early) (vii) Irrigated. (viii) weedings on 4, 24 and 25.8.1950; interculturing on 25.8.1950. (ix) 21.90". (x) 11, 12.11.1950.

2. TREATMENTS :
   All combinations of (1) and (2)
   (1) 4 levels of N : N₀=0, N₁=32, N₂=64 and N₃=96 lb./ac.
   (2) 4 levels of P₂O₅ : P₀=0, P₁=32, P₂=64 and P₃=96 lb./ac.

N as G.N.C. and P₂O₅ as Super. Manures were spread on 20.7.1950.

3. DESIGN :
   (i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4, (iv) (a) 33'x18"; (b) 25'x12". (v) 4'x3'. (vi) Yes.

4. GENERAL :
   (i) Normal. (ii) Nil. (iii) Grain yield. (iv) 1950-1956. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :
   (i) 2512 lb./ac.
   (ii) 359.2 lb./ac. (iii) None of the effects is significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>N₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₀</td>
<td>2880</td>
<td>2668</td>
<td>2195</td>
<td>2737</td>
<td>2620</td>
</tr>
<tr>
<td>P₁</td>
<td>2466</td>
<td>2870</td>
<td>2752</td>
<td>2500</td>
<td>2647</td>
</tr>
<tr>
<td>P₂</td>
<td>2294</td>
<td>2515</td>
<td>2511</td>
<td>2185</td>
<td>2376</td>
</tr>
<tr>
<td>P₃</td>
<td>2323</td>
<td>2658</td>
<td>2175</td>
<td>2456</td>
<td>2403</td>
</tr>
<tr>
<td>Mean</td>
<td>2491</td>
<td>2678</td>
<td>2408</td>
<td>2470</td>
<td>2512</td>
</tr>
</tbody>
</table>

S.E. of marginal mean of N or P = 89.8 lb./ac.
S.E. of body of table = 179.6 lb./ac.
4. GENERAL:

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1956. (b) No. (c) N.A. (v) Dabhoi, and Amreli. (b) N.A. (vi) Nil. (vii) The experiments were vitiated in 1951 and 1952.

5. RESULTS:

(i) 2181 lb./ac.
(ii) 368.8 lb./ac.
(iii) Main effect of N alone is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>N_0</th>
<th>N_1</th>
<th>N_2</th>
<th>N_3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1501</td>
<td>2153</td>
<td>2442</td>
<td>2090</td>
<td>2146</td>
</tr>
<tr>
<td>1844</td>
<td>2174</td>
<td>2723</td>
<td>2296</td>
<td>2235</td>
</tr>
<tr>
<td>2053</td>
<td>2153</td>
<td>2165</td>
<td>2135</td>
<td>2179</td>
</tr>
<tr>
<td>1983</td>
<td>1967</td>
<td>2448</td>
<td>2255</td>
<td>2.64</td>
</tr>
</tbody>
</table>

Mean: 1946 2115 2120 2244 2.8 lb./ac.

S.E. of marginal mean of N or P = 92.2 lb./ac.
S.E. of body of table = 184.4 lb./ac.

Crop: Paddy. (Kharif).
Object: To study the effect of leguminous crop Gram grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS:

(i) (a) Paddy—Gram. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A.
(iv) (a) to (c) N.A. (d) 9' x 9' (e) 8 seedlings per bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 5.63' (x) N.A.

2. TREATMENTS:

1. Control (no P_2O_5)
2. 30 lb./ac. of P_2O_5 as Super.
3. 130 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in Rabi.

These treatments are applied to the previous leguminous crop Gram.

3. DESIGN:

(i) R.B.D. (ii) (a) S. (b) N.A. (iii) S. (iv) (a) 21' x 18'. (b) 15' x 9'. (v) 4' ring round the net plot. (v) Yes.

4. GENERAL:

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 (Rabi) to 1952 (Rabi) (b) N.A. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1508 lb./ac.
(ii) 229.9 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1553</td>
</tr>
<tr>
<td>2.</td>
<td>1436</td>
</tr>
<tr>
<td>3.</td>
<td>1480</td>
</tr>
<tr>
<td>4.</td>
<td>1525</td>
</tr>
<tr>
<td>5.</td>
<td>1545</td>
</tr>
</tbody>
</table>
S.E./mean = 102.8 lb./ac.
Crop: Paddy.

Object: To study the effect of a leguminous crop Gram grown with and without $P_{2}O_{5}$ on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS:
   (i) (a) Paddy—Gram. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a), (b), (c) N.A. (d) 9"x9". (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 59.87°. (x) N.A.

2. TREATMENTS:
   1. Control (no $P_{2}O_{5}$)
   2. 50 lb./ac. of $P_{2}O_{5}$ as Super.
   3. 100 lb./ac. of $P_{2}O_{5}$ as Super.
   4. 150 lb./ac. of $P_{2}O_{5}$ as Super.
   5. Without legume (sown in Kharif and fallow in Rabi), these treatments are applied to the previous leguminous crop Gram.

3. DESIGN:
   (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24'x18'. (b) 15'x9'. (v) 4' ring round the net plot. (vi) Yes.

4. GENERAL:
   (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 (Rabi) to 1952 (Rabi). (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 1259 lb./ac.
   (ii) 216.5 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1362</td>
</tr>
<tr>
<td>2.</td>
<td>1153</td>
</tr>
<tr>
<td>3.</td>
<td>1284</td>
</tr>
<tr>
<td>4.</td>
<td>1227</td>
</tr>
<tr>
<td>5.</td>
<td>1270</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=96.8 lb./ac.</td>
</tr>
</tbody>
</table>

---

Crop: Paddy (Kharif).

Object: To study the effect of a leguminous crop Wal grown with and without $P_{2}O_{5}$ on the succeeding crop Paddy.

1. BASAL CONDITIONS:
   (i) (a) Paddy—Wal. (b) Wal in rabi. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) 9"x9". (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 98.01°. (x) N.A.

2. TREATMENTS:
   1. Control (no $P_{2}O_{5}$)
   2. 50 lb./ac. of $P_{2}O_{5}$ as Super.
   3. 100 lb./ac. of $P_{2}O_{5}$ as Super.
   4. 150 lb./ac. of $P_{2}O_{5}$ as Super.
   5. Fallow (sown in Kharif and fallow in Rabi).

3. DESIGN:
   (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24'x18'. (b) 15'x9'. (v) 4' ring round the net plot. (vi) Yes.
4. GENERAL:
(i) N.A. (ii) Nil. (iii) N.A. (iv) (a) 1949 (Rabi) to 1952 (Rabi), (b) No. (c) N.A. (v) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 2492 lb./ac.
(ii) 182.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2472</td>
</tr>
<tr>
<td>2.</td>
<td>2525</td>
</tr>
<tr>
<td>3.</td>
<td>2468</td>
</tr>
<tr>
<td>4.</td>
<td>2686</td>
</tr>
<tr>
<td>5.</td>
<td>2307</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>81.7 lb./ac.</td>
</tr>
</tbody>
</table>


Object :- To study the effect of leguminous crop Wal grown with and without P₂O₅ on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS:
(i) (a) Paddy-Gram. (b) Wal in Rabi. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) 9"x9". (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 62.47. (x) N.A.

2. TREATMENTS:
1. Control (no P₂O₅).
2. 50 lb./ac. of P₂O₅ as Super.
3. 100 lb./ac. of P₂O₅ as Super.
4. 150 lb./ac. of P₂O₅ as Super.
5. Without legumes (sown in Kharif and fallow in Rabi).
These treatments are applied to the previous leguminous crop Wal and the residual effect on paddy is studied this year.

3. DESIGN:
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24'x18'. (b) 15'x9'. (v) 4½' ring round the net plot. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 (Rabi) to 1952 (Rabi), (b) No. (c) N.A. (iv) N.A. (v) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 3391 lb./ac.
(ii) 226.5 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>3452</td>
</tr>
<tr>
<td>2.</td>
<td>3384</td>
</tr>
<tr>
<td>3.</td>
<td>3416</td>
</tr>
<tr>
<td>4.</td>
<td>3513</td>
</tr>
<tr>
<td>5.</td>
<td>3190</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>101.37 lb./ac.</td>
</tr>
</tbody>
</table>
Crop : Paddy (Kharif).
Object : To study the effect of leguminous crop Wal grown with and without P$_2$O$_5$ on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :
(i) (a) Paddy—Wal. (b) Wal in Rabi. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a), (b) and (c) N.A. (d) 9' x 9'. (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 50.65'. (x) N.A.

2. TREATMENTS :
1. Control (no P$_2$O$_5$).
2. 50 lb./ac. of P$_2$O$_5$ as Super.
3. 100 lb./ac. of P$_2$O$_5$ as Super.
4. 150 lb./ac. of P$_2$O$_5$ as Super.
5. Without legume (sown in Kharif and fallow in Rabi).
P$_2$O$_5$ applied to previous crop Wal.

3. DESIGN :
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24' x 18'. (b) 15' x 9'. (v) 4' ring round the net plot. (vi) Yes.

4. GENERAL :
(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 to 1952 (Rabi). (b) No. (c) N.A. (v) (a) Nil. (vi) and (vii) Nil.

5. RESULTS :
(i) 1950 lb./ac.
(ii) 614.0 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac. of treatments.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1916</td>
</tr>
<tr>
<td>2.</td>
<td>1972</td>
</tr>
<tr>
<td>3.</td>
<td>1763</td>
</tr>
<tr>
<td>4.</td>
<td>2049</td>
</tr>
<tr>
<td>5.</td>
<td>2049</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>274.5 lb./ac.</td>
</tr>
</tbody>
</table>

Crop : Paddy (Kharif).
Object : To study the effect of leguminous crop Wal grown with and without P$_2$O$_5$ on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :
(i) (a) Paddy—Wal. (b) Wal in Rabi. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) 9' x 9'. (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 59.87'. (x) N.A.

2. TREATMENTS :
1. Control (no P$_2$O$_5$).
2. 50 lb./ac. of P$_2$O$_5$ as Super.
3. 100 lb./ac. of P$_2$O$_5$ as Super.
4. 150 lb./ac. of P$_2$O$_5$ as Super.
5. Without legume (sown in Kharif and fallow in Rabi).
Treatments given to the previous leguminous crop Wal.

3. DESIGN :
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24' x 18'. (b) 15' x 9'. (v) 4' ring round the net plot. (vi) Yes.
4. GENERAL:
(i) N.A.  (ii) N.A.  (iii) Grain yield.  (iv) (a) 1949 to 1952 (Rabi).  (b) No.  (c) N.A.  (v) (a) Nil.  (b) N.A.  (vi) and (vii) N.A.

5. RESULTS:
(i) 1494 lb./ac.
(ii) 241.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1560</td>
</tr>
<tr>
<td>2.</td>
<td>1528</td>
</tr>
<tr>
<td>3.</td>
<td>1343</td>
</tr>
<tr>
<td>4.</td>
<td>1512</td>
</tr>
<tr>
<td>5.</td>
<td>1529</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>108.0 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Paddy (Kharif).

Object: To find out the N and P<sub>2</sub>O<sub>5</sub> requirements of Paddy.

1. BASAL CONDITIONS:
(i) (a) Paddy—Gram.  (b) Gram.  (c) Nil.  (ii) (a) Medium black.  (b) Refer soil analysis, Dabhol.  (iii) 30.6.1951.  (iv) (a) N.A.  (b) Drilled.  (c) N.A.  (d) Between rows 15'.  (e) N.A.  (v) Nil.  (vi) K.226.  (vii) Irrigated.  (viii) N.A.  (ix) 20.8.1.

2. TREATMENTS:
All combinations of (1) and (2)
(1) 4 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.
(2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.
N as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

3. DESIGN:
(i) 4x4 Fact. in R.B.D.  (ii) (a) 16.  (b) N.A.  (iii) 4.  (iv) (a) J1'x25'.  (b) 26'x20'.  (v) 2' ring round the net plot.  (vi) Yes.

4. GENERAL:
(i) Good.  (ii) Nil.  (iii) Grain yield.  (iv) (a) 1951—N.A.  (b) Yes.  (c) N.A.  (v) (a) Bulhar.  (b) N.A.  (vi) and (vii) Nil.

5. RESULTS
(i) 3831 lb./ac.
(ii) 317.5 lb./ac.
(iii) Only main effect of N is significant.
(iv) Av. yield of grain in lb./ac.

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S.E. of any marginal mean = 79.4 lb./ac.
S.E. of body of table = 158.7 lb./ac.
Crop := Paddy (Kharif).

Object := To find out the \( N \) and \( P_2O_5 \) requirements of Paddy.

1. **BASAL CONDITIONS:**
   (i) (a) Paddy—Gram. (b) Gram. (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Dabhoi. (iii) 16.7.1952. (iv) (a) N.A. (b) Ploughed (c) 25 lb./ac. (d) 15' apart. (e) N.A. (v) K.226. (vii) Irrigated. (viii) 3 weedings and interculturings. (ix) 28.53'. (x) 3.12.1952.

2. **TREATMENTS:**
   All combinations of (1) and (2)
   (1) 4 levels of \( N \): \( N_0 = 0, N_1 = 32, N_2 = 64 \) and \( N_3 = 96 \) lb./ac.
   (2) 4 levels of \( P_2O_5 \): \( P_0 = 0, P_1 = 32, P_2 = 64 \) and \( P_3 = 96 \) lb./ac.

   \( N \) as A/S and \( P_2O_5 \) as Super. Manures applied on 16.9.1952.

3. **DESIGN:**
   (i) \( 4 \times 4 \) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 30' x 25'. (b) 27' x 15'. (v) 5' ring round the net plot. (vi) Yes.

4. **GENERAL:**
   (i) Normal (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951—N.A. (b) Yes. (c) N.A. (v) (a) Bulsar, and Amreli. (b) N.A. (vi) and (vii) Nil.

5. **RESULTS:**
   (i) 4197 lb./ac.
   (ii) 464.6 lb./ac.
   (iii) None of the effects is significant.
   (iv) Av. yield of grain in lb./ac.

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Mean          4306      4218      4199      4066      4197

S.E. of any marginal mean = 116.2 lb./ac.
S.E. of body of table   = 232.3 lb./ac.

---

Crop := Paddy (Kharif).

Object := To find out the \( N \) and \( P_2O_5 \) requirements of Paddy.

2. **BASAL CONDITIONS:**
   (i) (a) No. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 20.6.1953 4 to 8.8.1953. (iv) (a) 3 ploughings and 2 harrowings. (b) Transplanting. (c) —. (d) 15'. (e) N.A. (v) 5 C/L of F.Y.M. (vi) K. 226. (vii) Irrigated. (viii) Weeding between 4 and 6.9.1953. (ix) 45.25'. (x) 18.11.1953.
2. TREATMENTS:
All combinations of (1) and (2)
(1) 4 levels of N: $N_0=0$, $N_1=32$, $N_2=64$ and $N_3=96$ lb./ac.
(2) 4 levels of $P_2O_5$: $P_0=0$, $P_1=32$, $P_2=64$ and $P_3=96$ lb./ac.
N as A/S and $P_2O_5$ as Super.

3. DESIGN:
(i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) 240' x 50'. (iii) 4. (iv) (a) 30' x 25'. (b) 20' x 14'. (v) 5' all round the net plot. (vi) Yes.

4. GENERAL:
(i) Above normal. (ii) The plots receiving high doses of N were attacked by stem-borer. The extent of damage is about 10%. (iii) Weight of grain and straw. (iv) (a) 1951—1955. (b) Yes. (c) N.A. (v) (a) Bulsar and Amreli. (b) N.A. (vi) The crop was transplanted as drilling was impossible due to continuous rains. (vii) Nil.

5. RESULTS:
(i) 2881 lb./ac. (ii) 593.9 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

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Mean
2745 3100 2945 2732 2881

S.E. of any marginal mean = 148.4 lb./ac.
S.E. of body of table = 296.8 lb./ac.

Crop: Paddy (Kharif).
Object: To study the effect of A/S and Ammo. Phos. on the yield of Paddy.

1. BASAL CONDITIONS:
(i) (a) to (c) N.A. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 18.6.1948; 6,8,1948. (iv) (a) and (b) N.A. (c) 60 lb./bigha. (d) and (e) N.A. (v) N.A. (vi) K. 226 (late). (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 24.11.1948.

2. TREATMENTS:
All combinations of (1) and (2) + a control (no manure)
(1) 2 sources of N: $S_1=A/S$ and $S_2=Ammo. Phos.$
(2) 2 levels of N: $N_1=30$ and $N_2=60$ lb./ac.

3. DESIGN:
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 112' x 12'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.
5. RESULTS:
(i) 1423 lb./ac.
(ii) 193.8 lb./ac.
(iii) Only ‘Control vs others’ is highly significant.
(iv) Av. yield of grain in lb./ac.

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S.E. of any marginal mean = 79.1 lb./ac.
S.E. of body of table = 111.9 lb./ac.

Crop : Paddy (Kharif),
Ref : Gj. 50(28),
Type : ‘M’.

Object :—To find out the effect of application of N and P₂O₅ through Sann on Paddy.

1. BASAL CONDITIONS:
   (i) (a) Paddy — paddy, (b) Paddy (Kharif), (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Vyara.
   (iii) 14.6.1950/20 and 21.7.1950. (iv) (a) to (c) N.A. (d) 6’ x 6’. (e) 4. (v) 5 C.L./ac. of F.Y.M.
   (vi) Zinia-31 (early). (vii) Irrigated. (viii) 2 weedings. (ix) 74.20”. (x) 4.11.1950.

2. TREATMENTS:
   Main-plot treatments :
   4 levels of N as A/S : N₀=0, N₁=40, N₂=60 and N₃=80 lb./ac.
   Sub-plot treatments :
   All combinations of (1) and (2)+a control (Only green manuring without P₂O₅)
   1. 3 levels of P₂O₅ as Super : P₁=20, P₂=30 and P₃=40 lb./ac.
   2. 2 methods of application of P₂O₅ (directly and indirectly) : M₁=P₂O₅ applied to Sann and Sann as green manuring to paddy (indirectly). M₂=P₂O₅ applied to paddy (directly).

3. DESIGN :
   (i) Split-plot. (ii) (a) 4 main-plots/block ; 7 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Main-plot : 33’ x 112’ ; Sub-plot : 33’ x 16’. (b) 27’ x 10’. (v) 3’ ring round the net plot. (vi) Yes.

4. GENERAL :
   (i) Normal. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) Nil, (b) N.A. (vi) and (vii) Nil.

5. RESULTS :
   (i) 2674 lb./ac.
   (ii) (a) 531.2 lb./ac.
   (b) 303.3 lb./ac.
   (iii) Only N effect is significant. Others are not significant.
(iv) Av. yield of grain in lb./ac.

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S.E. of difference of two
1. main-plot treatment means = 126.9 lb./ac.
2. sub-plot treatment means = 95.9 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 191.8 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 218.3 lb./ac.

Crop :-Paddy (Kharif).
Site :-Agri. Res. Stn., Vyara.
Ref :-Gj. 51(29)/50(28).
Type :-'M'.

Object :-To find the effect of application of N and P₂O₅ through Sann on Paddy.

1. BASAL CONDITIONS :
   (i) (a) Paddy—paddy. (b) Paddy (Kharif). (c) As per treatments. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 17.6.1951/19 to 21.7.1951. (iv) (a) to (c) N.A. (d) 6'×6'. (e) 4. (v) 5 C.L/ac. of F.Y.M. (vi) Zinia-31 (early). (vii) Irrigated. (viii) 2 weedings. (ix) 32.70'. (x) 1.11.1951 and 6.11.1951.

2. TREATMENTS :
   Main-plot treatments :
   4 levels of N as A/S : N₀=0, N₁=40, N₂=60 and N₃=80 lb./ac.
   Sub-plot treatments :
   All combinations of (1) and (2)+a control (Only G.M. without P₂O₅)
   1. 3 levels of P₂O₅ as Super : P₁=20, P₂=30 and P₃=40 lb./ac.
   2. 2 methods of application of P₂O₅ :=M₁=P₂O₅ applied to Sann and Sann used as green manuring to paddy (indirectly); M₂=P₂O₅ applied to paddy (directly).

3. DESIGN :
   (i) Split-plot. (ii) (a) 4 main-plots/block; 7 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Main-plot : 33'×112'; Sub-plot : 33'×16'. (b) 27'×10'. (v) 3' alround. (vi) Yes.

4. GENERAL :
   (i) Normal. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) Sann raised for green manuring practically failed due to absence of moisture.

5. RESULTS :
   (i) 1417 lb./ac.
   (ii) (a) 501.1 lb./ac. (b) 269.9 lb./ac.
   (iii) Main effect of N and 'control vs. other sub-plot treatments' effect are significant. Others are not significant.
(iv) Av. yield of grain in lb./ac.

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Mean | 1198 | 1313 | 1566 | 1592 | 1417 |

S.E. of difference of two

1. main-plot treatment means = 119.7 lb./ac.
2. sub-plot treatment means = 85.3 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 170.7 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 198.8 lb./ac.

Crop :-Paddy (Kharif).
Site :-Agri. Res. Stn., Vyara.
Type :-'M'.

Object :-To find the effect of application of N and P₂O₅ through Sann on Paddy.

1. BASAL CONDITIONS :
   (i) (a) Paddy—paddy. (b) Paddy. (c) As per treatments. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 12.6.1952/19.7.1952. (iv) (a) to (c) N.A. (d) 6'x6' 4. (v) 5 C.L. a/c of F.Y.M. (vi) Zinia-31 (early) (vii) Irrigated. (viii) 2 Weeding. (ix) 40.91'. (x) 4, 5, 7, 11.1952.

2. TREATMENTS :
   Main-plot treatments :
   4 levels of N as A/S: N₀=0, N₁=40, N₂=60 and N₃=80 lb./ac.
   Sub-plot treatments :
   All combinations of (1) and (2)+a control (only GM. without P₂O₅)
   (1) 3 levels of P₂O₅ as Super : P₁=20, P₂=30 and P₃=40 lb./ac.
   (2) 2 methods of application of P₂O₅: Mₑ=P₂O₅ applied to sann and sann used as green manuring to paddy (indirectly) and M₂=P₂O₅ applied to Paddy (directly).

3. DESIGN :
   (i) Split-plot. (ii) (a) 4 main-plots/block ; 7 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Sub-plot : 33'x16'; Main-plot size : 33'x112'. (b) 27'x10'. (v) 3' ring round the net plot. (vi) Yes.

4. GENERAL :
   (i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1950—1952. (b) Yen. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :
   (i) 1855 lb./ac.
   (ii) (a) 305.56 lb./ac.
   (b) 203.8 lb./ac.
   (iii) Main effect of N and M and interaction P X M are significant. Others are not significant.
(iv) Av. yield of grain in lb./ac.

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S.E. of difference of two
1. main-plot treatment means = 73.0 lb./ac.
2. sub-plot treatment means = 64.4 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 128.3 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 139.8 lb./ac.

Crop :- Paddy (Kharif).
Site :- Agri. Res. Stn., Waghai.

Object :- To find out the effect of manure mixture on Paddy.

1. BASAL CONDITIONS :
(i) (a) Paddy—Cotton—Rabi Jowar. (b) Jowar. (c) Nil. (ii) (a) Black soil. (b) N.A. (iii) 21-6-1951.
(iv) (a) 2 ploughings and 2 harrowings. (b) to (e) N.A. (v) Nil. (vi) Early. (vii) Unirrigated. (viii) 3 weedings and 1 interculturing. (ix) 26°. (x) 11.10.1951.

2. TREATMENTS :
1. No manuring.
2. 280 lb./ac. of manure mixture.

3. DESIGN :
(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 38°x12'. (b) 34°x3'. (v) 2' ring round the net plot. (vi) Yes.

4. GENERAL :
(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :
(i) 1173 lb./ac.
(ii) 116.5 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1070</td>
<td>33.63 lb./ac.</td>
</tr>
<tr>
<td>2.</td>
<td>1275</td>
<td></td>
</tr>
</tbody>
</table>
Crop :- Paddy (Kharif).

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of Paddy.

1. BASAL CONDITIONS:
   (i) (a) Paddy-Nagli. (b) Nagli. (c) Nil. (ii) (a) Light and brownish soil. (b) N.A. (iii) 27.1.1952. (iv) (a) 2 ploughings and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 3 hand wecdings and 1 interculturing. (ix) 31.17°. (x) 14 to 17.10.1952.

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 4 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.
   (2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.
   N as G N.C. and P<sub>2</sub>O<sub>5</sub> as Super.

3. DESIGN:
   (i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 30'x10'. (v) N.A. (vi) Yea.

4. GENERAL:
   (i) Not satisfactory. In July, crop growth was stunted; grain development was not satisfactory for want of rains and hence yield was poor. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) to (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 1009 lb./ac.
   (ii) 241.3 lb./ac.
   (iii) Main effects of N, P and interaction NP are significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>N&lt;sub&gt;0&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P&lt;sub&gt;0&lt;/sub&gt;</td>
<td>716</td>
<td>784</td>
<td>1054</td>
<td>1274</td>
</tr>
<tr>
<td>P&lt;sub&gt;1&lt;/sub&gt;</td>
<td>677</td>
<td>839</td>
<td>1113</td>
<td>1220</td>
</tr>
<tr>
<td>P&lt;sub&gt;2&lt;/sub&gt;</td>
<td>669</td>
<td>864</td>
<td>1058</td>
<td>1190</td>
</tr>
<tr>
<td>P&lt;sub&gt;3&lt;/sub&gt;</td>
<td>1150</td>
<td>852</td>
<td>1383</td>
<td>1303</td>
</tr>
<tr>
<td>Mean</td>
<td>803</td>
<td>835</td>
<td>1152</td>
<td>1247</td>
</tr>
</tbody>
</table>

S.E. of marginal means = 60.3 lb./ac.
S.E. of body of table = 120.7 lb./ac.

Crop :- Paddy (Kharif).

Object :- To study the response to N and P<sub>2</sub>O<sub>5</sub> applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) Paddy (Kado). (c) No. (ii) Black to deep black. (iii) 5 C.L./ac. of F.Y.M. (iv) Kado. (v) (a) to (c) N.A. (vi) Spacing between rows—6'; spacing between plants—3'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 59.87°. (x) 20.10.1952.

2. TREATMENTS:
   1. Control.
   2. 64 lb./ac. of N as mixture of G.N.C. and A/S.
   3. 64 lb./ac. of N as mixture of G.N.C. and A/S+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

3. DESIGN:
   (i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list few villages were chosen, retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites—2. (iii) (a) 42°x31°-8'. (b) 33°x33'. (iv) N.A.
4. GENERAL:
(i) Not good due to lack of rains. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Only one trial was conducted. Other trials were vitiated.

5. RESULTS:
(i) 310.0 lb./ac.
(ii) 148.8 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.
   Treatment
   
<table>
<thead>
<tr>
<th></th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>320.0</td>
</tr>
<tr>
<td>2.</td>
<td>200.0</td>
</tr>
<tr>
<td>3.</td>
<td>410.0</td>
</tr>
</tbody>
</table>
   S.E./mean = 148.8 lb./ac.

Crop: Paddy (Kharif).
Centre: Bansada.
Object: To study the response to N and P4O10 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Kada Paddy. (c) No.
(ii) Medium black. (iii) No. (iv) Kada paddy (mid-loc). (v) (a) Nil. (b) Transplanting. (c) N.A. (d) 1' spacing between rows. (e) N.A. (f) N.A. (g) Unirrigated.

2. TREATMENTS:
1. Control.
2. 64 lb./ac. of Nasa mixture of A/S and G.N.C.
3. 64 lb./ac of Nasa mixture of A/S and G.N.C. + 32 lb./ac of P4O10 as Super.
Super was applied after ploughing; N was applied in two doses, one at transplanting and one after tillering.

3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. (iii) (a) 5' x 9' at one site and 11' x 14' at another site. (b) 33' x 33'. (iv) N.A.

4. GENERAL:
(i) Stunted growth, withering due to want of rains. Yields of plots having double dose of N and P were heighest. (ii) Nil. (iii) Straw yield. (iv) 1952, conducted only for one year. (b) N.A. (c) N.A. (v) N.A. (vi) Less rainfall. (vii) Nil.

5. RESULTS:
(i) 184 lb./ac.
(ii) 417.2 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

   Treatment
   
<table>
<thead>
<tr>
<th></th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2010</td>
</tr>
<tr>
<td>2.</td>
<td>2070</td>
</tr>
<tr>
<td>3.</td>
<td>1200</td>
</tr>
</tbody>
</table>
   S.E./mean = 238.62 lb./ac.

Crop: Paddy, (Kharif).
Centre: Bardoli.
Object: To study the response to N and P4O10 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Paddy in kharif. (c) 5 to 10 C.L./ac. of F.Y.M. (ii) Medium black. (iii) 5 to 10 C.L./ac of F.Y.M. (iv) Paddy (Kada). (v) (a), (b) and (c) N.A. (d) 6' x 6' spacing between rows. (e) N.A. (vi) N.A. (vii) Two irrigations were given in one trial; it was given at the time of flowering. (viii) N.A. (ix) 35' 01'. (x) 1.10.1952 to 22.10.1952.
2. TREATMENTS:
1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C and A/S. + 32 lb./ac. of P₂O₅ as Super.
P₂O₅ was applied after ploughing. N was applied in 2 doses, one at transplanting and one at tilling.

3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list of few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites—4. (iii) (a) 50’ × 44’. (b) 33’ × 33’. (iv) N.A.

4. GENERAL:
(i) Good in irrigated plots. Poor in other plots. (ii) N.A. (iii) Grain and straw yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Experiment failed at one site.

5. RESULTS:
(i) 2150 lb./ac.
(ii) 147.6 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1773</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>2382</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>2293</td>
<td>= 82.0 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Paddy (Kharif).
Centre: Dharampur.
Object: To study the response to N and P₂O₅ applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Wał in village Bamti and Paddy in village Bandia. (c) No manures to wał; 5 C.L./ac. of F.Y.M. to Paddy. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Kado Paddy at 3 sites, Kolum (late) at one site. (v) (a) N.A. (b) Transplanting (c) N.A. (d) 6’. (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 65.04’. (x) 10.10.1952 to 1.11.1952.

2. TREATMENTS:
1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C. and A/S + 32 lb./ac. of P₂O₅ as Super.
P₂O₅ was applied after ploughing and N in two doses, one at transplanting and other after tilling.

3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list; a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites—4. (iii) (a) 55’ × 42’. (b) 33’ × 33’. (iv) N.A.

4. GENERAL:
(i) Good. (ii) Lodging was observed in some plots. (iii) Grain and straw yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) N.A. (vi) After August, no rains. (vii) Nil.

5. RESULTS:
(i) 2158 lb./ac.
(ii) 213.6 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1940</td>
<td>115.6 lb./ac.</td>
</tr>
<tr>
<td>2.</td>
<td>2565</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>2870</td>
<td></td>
</tr>
</tbody>
</table>
Object:—To study the response to N and P$_2$O$_5$ applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Fallow in Rabi; Paddy in Kharif in Kuched and Wal in Abrana. (c) 5 to 15 C.L./ac. of F.Y.M. (ii) Black m dium. (iii) 7 to 12 C.L./ac. of F.Y.M. (iv) Kado Paddy (early). (v) (a), (b) and (c) N.A. (d) 6’ between rows. (e) N.A. (vi) Irrigation in Abrana and 1 irrigation in Kuched. (vii) N.A. (viii) 31.80”. (ix) 10.10.1952. (x) 10.10.1952.

2. TREATMENTS:
1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C. and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C. and A/S + 32 lb./ac of P$_2$O$_5$ as Super. Super was applied after ploughing. N was applied in two doses, one at transplan ting and one at tilling.

3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list, a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites =1, out of which one was vitiated. (iii) (a) 5’ x 40’ in one village, 5’ x 44’ in the other village. (b) 33’ x 33’. (iv) N.A.

4. GENERAL:
(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—for one year only. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) 2nd dose of manure not given at one site due to late rains.

5. RESULTS:
(i) 1830 lb./ac.
(ii) 306.4 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Control</td>
<td>1953</td>
</tr>
<tr>
<td>2.</td>
<td>2130</td>
</tr>
<tr>
<td>3.</td>
<td>140</td>
</tr>
</tbody>
</table>

S.E./mean = 176.8 lb./ac.

Crop :-Paddy (Kharif).
Centre :-Pareli.

Object:—To study the response to N and P$_2$O$_5$ applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Wal (Rabi) in Kumbhani village; Wheat (Rabi) in Pata village. (c) No. (d) Loamy and Gardens, (e) 5 C.L./ac. of F.Y.M. (iv) Kado variety. (v) (a), (b) and (c) N.A. (d) 6” x 6” spacing between bunches. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 56.40”. (x) 17.10.52 to 4.11.1952.

2. TREATMENTS:
1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C. and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C. and A/S + 32 lb./ac of P$_2$O$_5$ as Super. P$_2$O$_5$ was applied after ploughing. N applied in two doses, one at transplanting and one at tilling.

3. DESIGN:
(i) (ii) Villages were selected at random from a taluka and a list was prepared. From this list, a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites = 4. (iii) (a) 49.5’ x 41’. (b) 33’ x 33’. (iv) N.A.

4. GENERAL:
(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) No. (c) N.A. (d) N.A. (e) Nil. (f) 2nd dose of manure was not applied due to lack of rains. The yields of one trial out of 4 were as follows: Treat (1) = 500, Treat (2) = 6.25 and treat (3) = 6.75 lb./plot and plot size 33’ x 33’.
5. RESULTS:

(i) 1037 lb./ac.
(ii) 33.20 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>950</td>
</tr>
<tr>
<td>2.</td>
<td>1052</td>
</tr>
<tr>
<td>3.</td>
<td>1110</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=17.60 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Paddy (Kharif).
Centre: Songad.

Object: To study the response to N and P2O5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Paddy. (c) No. (ii) Loamy in one village; Black in the other village (dropped). (iii) 5 C.L./ac. of F.Y.M. in village Bedwan. No manure in the a village (dropped). (iv) Mid-late. Kado in village Bedwan; Mid-late. Mayawat in 2nd village (dropped). (v) (a), (b) and (c) N.A. (d) 9’x9’ spacing, (e) N.A. (vi) N.A. (vii) Irrigated at flowering stage. (viii) N.A. (ix) 39.27’. (x) 27.10.1952.

2. TREATMENTS:

1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C. and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C. and A/S+32 lb./ac. of P2O5 as Super.

Manures applied in single dose at the time of planting.

3. DESIGN:

(i), (ii) Villages were selected at random from a taluka and a list was prepared. From this list, a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites-2 (one vitiated). (iii) (a) 55’x40’. (b) 33’x33’. (iv) N.A.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) No. (c) N.A. (v) N.A. (vi) Nil. (vii) Only one village selected and out of 2 trials in the village, one trial was vitiated.

5. RESULTS:

(i) 2229.
(ii) N.A.
(iii) N.A.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1537</td>
</tr>
<tr>
<td>2.</td>
<td>2500</td>
</tr>
<tr>
<td>3.</td>
<td>650</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=N.A.</td>
</tr>
</tbody>
</table>

Crop: Paddy (Kharif).
Centre: Valod.

Object: To study the response to N and P2O5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Paddy. (c) 5 to 10 C.L./ac. of F.Y.M. (ii) Medium black. (iii) 8 to 10 C.L./ac. of F.Y.M. (iv) Paddy (late). (v) (a) to (c) N.A. (d) 6” spacing between rows. (e) N.A. (vi) N.A. (vii) Unirrigated (viii) N.A. (ix) 37.57’. (x) 17.10.1952.
2. TREATMENTS:
1. Control.
2. 64 lb/acre of N as a mixture of G.N.C. and A/S.
3. 64 lb/acre of N as a mixture of G.N.C. and A/S + 32 lb/acre of P₂O₅ as Super.
   Super applied after ploughing. N was applied in two doses, one at transplanting and one at tillering.

3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list, a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites 4, out of which one was vitiated. (iii) (a) Plot size varies from site to site. (b) 33' × 33'. (iv) N.A.

4. GENERAL:
(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1972, for one year only. (b) N.A. (c) N.A. (v) N.A. (vi) Rainfall not sufficient. (vii) One trial failed.

5. RESULTS:
(i) 64 lb/acre.
(ii) 147.2 lb/acre.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb/acre.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>546</td>
</tr>
<tr>
<td>2.</td>
<td>627</td>
</tr>
<tr>
<td>3.</td>
<td>788</td>
</tr>
<tr>
<td>mean</td>
<td>84.8 lb/acre</td>
</tr>
</tbody>
</table>

Crop: Paddy (Kharif).
Centre: Vyara.
Type: 'M'.

Object: To study the response to N and P₂O₅ applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Paddy. (c) 5 C.L./acre of F.Y.M. (d) Black soil. (e) 3 C.L./acre of F.Y.M. (f) Kaso (early) in village Vyara; Marjerval (mid-late) in Mysore village. (g) N.A. (h) N.A. (i) N.A. (j) 9' x 9' (k) 4 to 5

2. TREATMENTS:
1. Control.
2. 61 lb/acre of N as mixture of G.N.C. and A/S.
3. 61 lb/acre of N as mixture of G.N.C. and A/S + 32 lb/acre of P₂O₅ as Super.
   P₂O₅ was applied after ploughing. N was applied in two doses, one at transplanting and other at tillering.

3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list, a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites - 4. (iii) (a) 40' × 34'. (b) 33' × 33'. (iv) N.A.

4. GENERAL:
(i) Not good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) No. (c) N.A. (d) N.A. (e) Crop suffered for want of sufficient rains. (f) Nil.

5. RESULTS:
(i) 740 lb/acre.
(ii) 196.8 lb/acre.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb/acre.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>560</td>
</tr>
<tr>
<td>2.</td>
<td>815</td>
</tr>
<tr>
<td>3.</td>
<td>845</td>
</tr>
<tr>
<td>S.E /mean</td>
<td>81.6 lb/acre</td>
</tr>
</tbody>
</table>
Crop: Paddy (Kharij).
Object: To find out the optimum number of seedlings per bunch and spacing to give maximum yield.

1. BASAL CONDITIONS:
(i) (a) Paddy - Wal. (b) Wal in Rabi. (c) 15 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A.
(iii) 7.6.1948/27.28.7.1948. (iv) (a) N.A. (b) Transplanting. (c) - (d) and (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 32.38°. (x) 14, 20, 21, 10.1948.

2. TREATMENTS:
Main-plot treatments:
- 3 spacings: C1 = 6' x 6', C2 = 9' x 9' and C3 = 12' x 12'.
Sub-plot treatments:
- No. of seedlings/bunch: S1 = 4, S2 = 6, S3 = 8, S4 = 10 and S5 = 12.

3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) For C1 = 11' x 21', C2 = 12' x 21', C3 = 13' x 21' (sub-plot sizes). (b) 9' x 15'. (v) For treatments: C1 = 1' x 3'; C2 = 1.5' x 3' and C3 = 2' x 3'. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947—1951. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 1187 lb./ac.
(ii) (a) 435.8 lb./ac.
(b) 789.7 lb./ac.
(iii) Only main treatments (spacing) differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>Mean</th>
</tr>
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</tbody>
</table>

S.E. of difference of two
1. main-plot treatment means
2. sub-plot treatment means
3. sub-plot treatment means at the same level of main-plot treatment
4. main-plot treatment means at the same level of sub-plot treatment

Crop: Paddy (Kharij).
Object: To find out the optimum number of seedlings per bunch and spacing to give maximum yield.

BASAL CONDITIONS:
(i) (a) Paddy—Wal. (b) Wal. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) and (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 56.05°. (a) N.A.
2. TREATMENTS:

Main-plot treatments:
3 spacings: \( C_1 = 6' \times 6', C_2 = 9' \times 9' \) and \( C_3 = 12' \times 12' \).

Sub-plot treatments:
No. of seedlings/bunch: \( S_1 = 4, S_2 = 6, S_3 = 8, S_4 = 10 \) and \( S_5 = 12 \).

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Sub-plot \( C_1 = 11' \times 21', C_2 = 12' \times 21', C_3 = 13' \times 21' \), main-plot: \( C_1 = 11' \times 105', C_2 = 12' \times 105' \) and \( C_3 = 13' \times 105' \). (b) \( 9' \times 15' \) (sub-plot). (v) For \( C_1 = 1' \times 3' \), for \( C_2 = 1.5' \times 3' \), and for \( C_3 = 2' \times 3' \). (vi) Yes.

4. GENERAL:

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1947-1951. (b) Nc (c) N.A. (v) N.A. (vi) Nil. (vii) N.A.

5. RESULTS:

(i) 2554 lb./ac. (ii) (a) 570.1 lb./ac. (b) 289.1 lb./ac. (iii) Only sub-plot treatments differ significantly. Others are not significant. (iv) Av. yield of grain in lb./ac. ---

<table>
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<tr>
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<th>( C_3 )</th>
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<td>( S_5 )</td>
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<td>2655</td>
<td>2469</td>
<td>2534</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. main-plot treatment means \( = 161.2 \) lb./ac. 
2. sub-plot treatment means \( = 105.6 \) lb./ac. 
3. sub-plot treatment means at the same level of main-plot treatment \( = 129.4 \) lb./ac. 
4. main-plot treatment means at the same level of sub-plot treatment \( = 229.8 \) lb./ac. 

Crop: Paddy (Khari). Ref: Gj. 50(124). Type: "C".

Site: Agri. Res. Stn., Bulsar.}

Object: To find out the optimum number of seedlings per bunch and spacing to give maximum yield.

1. BASAL CONDITIONS:

(i) (a) Paddy — Wet. (b) Wet. (c) Nil (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) and (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 62.47. (x) N.A.

2. TREATMENTS:

Main-plot treatments:
3 spacings: \( C_1 = 6' \times 6', C_2 = 9' \times 9' \) and \( C_3 = 12' \times 12' \).

Sub-plot treatments:
No. of seedlings/bunch: \( S_1 = 4, S_2 = 6, S_3 = 8, S_4 = 10 \) and \( S_5 = 12 \).

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Sub-plot: \( C_1 = 11' \times 21', C_2 = 12' \times 21', C_3 = 13' \times 21' \), Gross main-plot: \( C_1 = 11' \times 105', C_2 = 12' \times 105' \) and \( C_3 = 13' \times 105' \). (b) Sub-plot: \( 9' \times 15' \) (v) \( 1' \times 3' \) for treatment \( C_1 \), \( 1.5' \times 3' \) for treatment \( C_2 \) and \( 2' \times 3' \) for treatment \( C_3 \). (vi) Yes.
4. GENERAL:
(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1947—1951. (b) No. (c) N.A. (v) (a) Navagaon, (b) N.A (vi) and (vii) Nil.

5. RESULTS:
(i) 2890 lb./ac.
(ii) (a) 483.5 lb./ac.
(b) 192.3 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
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<th>C₃</th>
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S.E. of difference of two
1. main-plot treatment means = 136.7 lb./ac.
2. sub-plot treatment means = 70.3 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 121.6 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 174.8 lb./ac.

Crop :-Paddy (Kharif).
Ref :-Gj. 51(168).
Type :-‘C’.

Object :—To find out the optimum number of seedlings per bunch and spacing to give maximum yield.

1. BASAL CONDITIONS:
(i) (a) Paddy—Wal. (b) Wal. (c) 15 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) N.A.
(iv) (a) to (c) N.A. (d) and (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 50.63", (x) N.A.

2. TREATMENTS:
Main-plot treatments:
3 spacings: C₁ = 6' x 6", C₂ = 9" x 9" and C₃ = 12" x 12".
Sub-plot treatments:
No. of seedlings/bunch: S₁ = 4, S₂ = 6, S₃ = 8, S₄ = 10 and S₅ = 12.

3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 4 (one replication vitiated). (iv) (a) Sub-plot: C₁ = 11' x 21", C₂ = 12' x 21' and C₃ = 13' x 21' and Gross main-plot: C₁ = 11' x 105", C₂ = 12' x 105' and C₃ = 13' x 105'. (b) Sub-plot: 9' x 15'. (v) 1' x 3' for treatment C₁, 1.5' x 3' for treatment C₂ and 2' x 3' for treatment C₃. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1947—1951. (b) No. (c) N.A. (v) (a) Navagaon, (b) N.A (vi) and (vii) Nil.

5. RESULTS:
(i) 1618 lb./ac.
(ii) (a) 185.9 lb./ac.
(b) 260.4 lb./ac.
(iii) Main-plot treatments alone differ highly significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>C1</th>
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<td>S5</td>
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<tr>
<td>Mean</td>
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<td>1655</td>
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</table>

S.E. of difference of two
1. main-plot treatment means
2. sub-plot treatment means
3. sub-plot treatment means at the same level of main-plot treatment
4. main-plot treatment means at the same level of sub-plot treatment

Crop: Paddy. (Kharif).

Object: To find out a suitable substitute for rabbing.

1. BASAL CONDITIONS:
(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 6' x 6'. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 59.17'. (x) N.A.

2. TREATMENTS:
1. Usual cultivator’s method of rabbing.
2. Mixing one basketful charcoal powder with surface soil without rabbing.
3. Applying manure mixture to the seed bed at 15 lb./gunta.
4. No rabbling as check.

3. DESIGN:
(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30' x 7'. (b) 28' x 6'. (v) 1' x 1' (vi) Yes.

4. GENERAL:
(i) N.A. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) Nil. (b) Nil. (vi) and (vii) N.A.

5. RESULTS:
(i) 1452 lb./ac.
(ii) 259.3 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>1913</td>
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<tr>
<td>3</td>
<td>1420</td>
</tr>
<tr>
<td>4</td>
<td>938</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>15.9 lb./ac.</td>
</tr>
</tbody>
</table>
Crop: Paddy, (Kharif).

Object: To find out the optimum spacing for Paddy.

1. BASAL CONDITIONS:
(i) (a) Nil. (b) Paddy. (c) Nil.
(ii) (a) Medium black. (b) Refer soil analysis, Dabhoi.
(iii) 30.6.1951
(iv) (a) N.A. (b) Drilling. (c) 25 lb./ac. (d) As per treatments. (e) N.A. (f) Paddy K-226.
(vii) Irrigated. (x) N.A.

2. TREATMENTS:
1. Narrow i.e. 12' spacing between two rows.
2. Normal i.e. 15' spacing between two rows.
3. Wider i.e. 18' spacing between two rows.

3. DESIGN:
(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 80'x15'. (b) 74'x15'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Good. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1951-1952. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:
(i) 3139 lb./ac.
(ii) 238.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
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<td>2.</td>
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<tr>
<td>3.</td>
<td>2835</td>
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<tr>
<td>S.E./mean</td>
<td>=119.3 lb./ac.</td>
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</tbody>
</table>

Crop: Paddy, (Kharif).

Object: To find the optimum spacing for Paddy.

1. BASAL CONDITIONS:
(i) (a) No. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 30.6.52
(iv) (a) N.A. (b) Drilled. (c) 25 lb./ac. (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M.

2. TREATMENTS:
3 row spacings: S1=12', S2=15' and S3=18'.

3. DESIGN:
(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6. (iv) (a) 80'x15'; (b) 70'x15'. (v) 5' on each end. (vi) Yes.

4. GENERAL:
(i) Good. (ii) (a) 1951—1952. (b) No. (c) N.A. (v) (a) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 3264 lb./ac.
(ii) 516.9 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
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<td>S.E./mean</td>
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</table>
Object: To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS:
   (i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black soil. (b) N.A. (iii) 12, 13.5.1950. (iv) (a) N.A. (b) Broadcasting. (c) N.A. (c) and (e) As per treatments. (v) 10 C.L./ac. of F.Y.M. (vi) Sukhwel No. 10 (early). (vii) Irrigated. (viii) Two weeding on 6 and 12.9.1950, (ix) 34°39'. (x) 14.11.1950.

2. TREATMENTS:
   Main-plot treatments:
   - 3 spacings: C1 = 6" X 6", C2 = 9" X 9" and C3 = 12" X 12".
   Sub-plot treatments:
   - No. of seedlings/bunch: S1 = 1, S2 = 2 and S3 = 3.

3. DESIGN:
   (i) Split-plot. (ii) (a) 3 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21" X 21"; main plot: 72" X 63". (b) 18" X 15"; main plot= 54" X 45". (c) 3' all round the net plot. (vi) Yes.

4. GENERAL:
   (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1952. (b) No. (c) N.A. (d) Bulsat. (b) N.A. (vii) and (vii) Nil.

5. RESULTS:
   (i) 3193 lb./ac. (ii) (a) 201.2 lb./ac. (b) 148.1 lb./ac. (iii) Only sub-plot treatments differ significantly. (iv) Av. yield of grain in lb./ac.

<table>
<thead>
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S.E. of difference of two
1. main-plot treatment means
2. sub-plot treatment means
3. sub-plot treatment means at the same level of main-plot treatment
4. main-plot treatment means at the same level of sub-plot treatment

---

Crop: Paddy (Kharif). Ref: Gj. 51(48).
Site: Agri. Res. Stn., Navagam. Type: 'C'.

Object: To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS:
   (i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black soil. (b) N.A. (iii) 13.7.1951. (iv) (a) N.A. (b) Transplanting. (c) --. (d) and (e) As per treatments. (v) 10 C.L./ac. of F.Y.M. (vi) Sukhwel No. 10 (early). (vii) Irrigated. (viii) Weeding on 15.5.1950. (ix) 14°60'. (x) 15.11.1951.
2. TREATMENTS:
Main-plot treatments:
3 spacings: $C_1 = 6' \times 6'$, $C_2 = 9' \times 9'$ and $C_3 = 12' \times 12'$.
Sub-plot treatments:
No of seedlings/bunch: $S_1 = 1$, $S_2 = 2$ and $S_3 = 3$.

3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24'x21' and main-plot: 72'x63'. (b) 18'x13'; main-plot 54'x45'. (v) 3 feet all round the net plot. (vi) Yes.

4. GENERAL:
(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) Bulsar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 2970 lb/ac.
(ii) (a) 271.0 lb/ac.
(b) 154.8 lb/ac.
(iii) Only interaction $S \times C$ is significant.
(iv) A+v. yield of grain in lb/ac.

<table>
<thead>
<tr>
<th></th>
<th>$C_1$</th>
<th>$C_2$</th>
<th>$C_3$</th>
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<td>2943</td>
<td>2950</td>
</tr>
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S.E. of difference of two:
1. Main-plot treatment means = 111.4 lb/ac.
2. Sub-plot treatment means = 63.4 lb/ac.
3. Sub-plot treatment means at the same level of main-plot treatment = 108.6 lb/ac.
4. Main-plot treatment means at the same level of sub-plot treatment = 265.4 lb/ac.

Crop: Paddy (Kharif).
Ref. L.Gj. 52(75).
Type: 1'C'.

Object: To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS:

2. TREATMENTS:
Main-plot treatments:
3 spacings: $C_1 = 6' \times 6'$, $C_2 = 9' \times 9'$ and $C_3 = 12' \times 12'$.
Sub-plot treatments:
No of seedlings/bunch: $S_1 = 1$, $S_2 = 2$ and $S_3 = 3$.

3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots/blocks; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24'x21' and main-plot: 72'x63'. (b) 18'x13'; main-plot: 54'x45'. (v) 3 feet all round the net plot. (vi) Yes.

4. GENERAL:
(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) Bulsar. (b) N.A. (vi) and (vii) Nil.
5. RESULTS:
(i) 3185 lb./ac.
(ii) (a) 99.4 lb./ac.
(b) 109.5 lb./ac.
(iii) Main effects of S and C and interaction S x C are highly significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>Mean</th>
</tr>
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<tr>
<td>S1</td>
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<td>S3</td>
<td>3525</td>
<td>3198</td>
<td>2988</td>
<td>3267</td>
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S.E. of difference of two

1. main-plot treatment means = 40.6 lb./ac.
2. sub-plot treatment means = 44.7 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 77.4 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 75.1 lb./ac.

Crop: Faddy (Kharif).

Object: To find out the optimum spacing and number of seedlings per bunch for Faddy.

1. BASAL CONDITIONS:
(i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 13, 14.8.1950. (iv) (a) N.A. (b) Varade method of broadcasting. (c) N.A. (d) and (e) As per treatments. (v) 15 C.L./ac. of F.Y.M. (vi) Jirasil No. 274 (late). (vii) Irrigated. (viii) Two weedings on 7 and 15.9.1950. (ix) 34.39" (x) 17, 18.11.1950.

2. TREATMENTS:
Main-plot treatments:
3 spacings: \( C_1 = 6' \times 6' \), \( C_2 = 9' \times 9' \) and \( C_3 = 12' \times 12' \).
Sub-plot treatments:
No. of seedlings/bunch: \( S_1 = 1, S_2 = 2 \) and \( S_3 = 3 \).

3. DESIGN:
(i) Split-pot. (ii) (a) 3 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) A. (iv) (a) 24' x 21': and main-plot: 72' x 63'; (b) 18' x 15', main-plot: 54' x 45'. (v) All around the net-plot. (vi) Yes.

4. GENERAL:
(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1952. (b) No. (c) N.A. (v) (a) Basra. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 3971 lb./ac.
(ii) (a) 260.3 lb./ac.
(b) 114.0 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>C₁</th>
<th>C₂</th>
<th>C₃</th>
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<td>S₂</td>
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<td>3964</td>
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<td>S₃</td>
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<td>4010</td>
<td>3806</td>
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S.E. of difference of two
1. main-plot treatment means
2. sub-plot treatment means
3. sub-plot treatment means at the same level of main-plot treatment
4. main-plot treatment means at the same level of sub-plot treatment

Crop : - Paddy (Kharij).
Ref : - Gj. 51(47).
Type : - 'C'.

Object : To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS :
   (i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black soil. (b) N.A. (iii) 13.1.1951/12.8.1951. (iv) (a) N.A. (b) Transplanting. (c) ---, (d) and (e) As per treatments. (v) 10 C.L./ac. of F.Y.M. (vi) Jirasal No. 274 (late). (vii) Irrigated. (viii) Weeding on 20.9.1951. (ix) 14.60'. (x) 2.1.1951.

2. TREATMENTS :
   Main-plot treatments :
   3 spacings : C₁ = 6' × 6', C₂ = 9' × 9' and C₃ = 12' × 12'.
   Sub-plot treatments :
   No. of seedlings/bunch : S₁ = 1, S₂ = 2 and S₃ = 3.

3. DESIGN :
   (i) Split-plot. (ii) (a) 3 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24' × 21'; main-plot : 72' × 63'. (b) 18' × 15'; main-plot : 54' × 45'. (v) 3' all round the net plot. (vi) Yes.

4. GENERAL :
   (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) Bulsar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :
   (i) 3625 lb./ac.
   (ii) (a) 281.6 lb./ac. (b) 134.7 lb./ac.
   (iii) Only the interaction S × C is highly significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
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<th>C₂</th>
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<td>3668</td>
<td>3704</td>
<td>3504</td>
<td>3625</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. main-plot treatment means
2. sub-plot treatment means
3. sub-plot treatment means at the same level of main-plot treatment
4. main-plot treatment means at the same level of sub-plot treatment

== 114.9 lb./ac.
== 55.0 lb./ac.
== 95.2 lb./ac.
== 138.9 lb./ac.
Crop :- Paddy (Khurif).


Ref :-Gj. 52(74).

Object :- To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS:

(i) (a) Paddy—Wheat. (b) Wheat. (c) N.A. (iii) Medium black soil. (b) N.A. (iii) 26,6,1952/17,28,2,1952.

(iv) (a) N.A. (b) Transplanting. (c) --. (d) and (e) As per treatments. (v) to C.L. ac. of P.Y.M. (vii) Transplant No. 271 (late). (vi) Irrigation. (viii) Woodage on 2 and 4 to 31,9,1952. (vii) 23,9,1952. (x) 11, 14,11,1952.

2. TREATMENTS:

Main-plot treatments:

3 spacings : $C_1 = 6' 	imes 6'$. $C_2 = 9' 	imes 9'$ and $C_3 = 12' 	imes 12'$.

Sub-plot treatments:

No. of seedlings/bunch : $S_1 = 1$, $S_2 = 2$ and $S_3 = 3$.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 min-plot at/block and 1 sub-plot/main-plot. (b) N.A. (iii) 4. (iv) (a) 2' x 21'; main-plot size = 72' x 61'. (b) 18' x 18', main-plot size = 34' x 45'. (v) 3' all round the main plot. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) Bulgar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(ii) 3185 lb./ac.

(b) 201.2 lb./ac.

(b) 97.7 lb./ac.

(iii) Main effect of $S$ is highly significant. Main effect of $C$ is significant. Interaction $S \times C$ is not significant.

(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>$S_1$</th>
<th>$S_2$</th>
<th>$S_3$</th>
<th>Mean</th>
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<td>3525</td>
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</tr>
</tbody>
</table>

Mean 3432 3174 2949 3185

S.E. of difference of two

1. main plot treatment means = 82.2 lb./ac.

2. sub-plot treatment means = 89.4 lb./ac.

3. sub-plot treatment means at the same level of main-plot treatment = 69.1 lb./ac.

4. main-plot treatment means at the same level of sub-plot treatment = 97.7 lb./ac.

Object :- To find the optimum combinations of $N$, $P_2O_5$ and spacing for getting maximum yield.
3. DESIGN:
(i) 3 x 2^{3} Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 1. (iv) (a) 30'x10'. (b) 26'x6'. (v) 2' all round the net plot. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) and (b) No. (c) N.A. (v) Nil. (b) N.A. (vi) Nil. (vii) For want of sufficient seedlings, only one replication could be taken instead of three.

5. RESULTS:
(i) 1890 lb./ac.
(ii) N.A.
(iii) N.A.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
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<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
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<td>2347</td>
<td>1890</td>
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</table>

S.E.s—N.A.

Crop :- Paddy (Kharif).

Object :-To study the relative merits of Japanese method and departmentally recommended method of Paddy cultivation.

1. BASAL CONDITIONS.
(i) (a) Paddy—Wheat. (b) Wheat. (c) Nil. (ii) (a) Medium black soil. (b) N.A. (iii) 23.6.1953/27.7.1953. (iv) (a) Preparing the land by puddling. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) 1 C.L./ac. of F.Y.M. for seed-bed treatment and 5 C.L./ac. of F.Y.M. in the field. (vi) Jrinal. No. 274 (late). (vii) Irrigated. (viii) One hand weeding. (ix) 40.93°. (x) 15.11.1953.

2. TREATMENTS:
64 treatment combinations of the following 6 factors each at two levels.
(i) Departmental method :
Seed bed :-
A=Flat.
B=1 C.L. F.Y.M.+8 lb./ac. of A/S per guntha.
Field :-
C=10'x10',
D=8 seedlings/bunch.
E=5 C.L. F.Y.M.+G.M.+64 lb./ac. of N as A/S+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
F=One hand weeding.

(ii) Japanese method:
Raised.
1 C.L./guntha of F.Y.M.+16 lb./guntha of A/S+16 lb./guntha of P<sub>2</sub>O<sub>5</sub> as layer of Ash.
3. DESIGN:
(i) 2² Fact. in R.B.D. (see general. (vii) (a) 32 (see general. (vii) (b) N.A. (iii), (iv) (a) 10⁻⁶'×33' (for 9'×9' spacing); and 10⁻¹⁰'×33⁻⁴' (for 10⁻⁰'×10⁻°' spacing). (b) 7'–6'×30'. (v) (i) ' around for 9'×9' spacing and 1' around for 10'×10' spacing. (vi) Yes.

4. GENERAL:
(i) Heavy lodging in 2nd week of October, 1953. (ii) Attack of Jassids in the 3rd week of S.e. (tember dusting by 5% B.H.C. powder. (iii) Grain and straw yield. (iv) (a) 1952–1953; (b) No. (c) N.A. (v) (a) Vyara. (b) N.A. (vi) Total rainfall was above normal. The distribution was also very bad as there were heavy rains in the last fortnight of August. There was complete absence of rain on the 1st of September. This combined with dry weather caused the crop to suffer from a heavy attack of Jassids. (vii) Originally it was laid out as a 2⁻² confounded in 2 replications. (viii) 5 blocks/replication and 8 plots/block but as F was same in both the methods, this has been treated as 2 simple Fact. in R.B.D., with 4 replications (32 plots/replication). The analysis was carried out and higher order interactions were pooled with error.

Results on page (45)

Crop :-Paddy (Kharif).
Site :- Agri. Res. Stn., Vyara.
Ref :- Gj. 53(10).
Type :- 'C.M'.

Object :- To compare the Japanese method of Paddy cultivation with departmental method of Paddy cultivation.

1. BASAL CONDITIONS :
(i) (a) No. (b) Wheat, (c) 5 C.L./ac. of F.Y.M. and G.M and 50 lb./ac. of N as A/S and 300 lb./ac. of G.N.C. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 21.8/1/1953/17.7./1953. (iv) (a) Ploughing. (b) Transplanting (c) -. (d) and (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. in summer, G.M. as Sann (vi) Paddy-Z. 31 (early fine Kalam'). (vii) Irrigated (viii) Puddling at planting time and weeding as per treatments. (ix) 7°. (x) 20.10.1953.

2. TREATMENTS:
All the 2⁴ combinations of the following 6 factors each at 2 levels.

<table>
<thead>
<tr>
<th>Deparmental method</th>
<th>Japanese method</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₀ = Flat seed-bed.</td>
<td>A₁ = Raised seed-bed.</td>
</tr>
<tr>
<td>B₀ = Manuring of seed-bed : 1 C.L/guntha of F.Y.M. and 8 lb./guntha of A/S.</td>
<td>B₁ = Manuring of seed-bed : 1 C.L/guntha of F.Y.M. and 16 lb./guntha of N as A/S</td>
</tr>
<tr>
<td>C₀ = Manuring of field : 5 C.L/ac. of F.Y.M. + G.M.+64 lb/ac. of P₂O₅ as Super.</td>
<td>C₁ = Manuring of field : 5 C.L/ac. of F.Y.M. +G.M.+64 lb/ac. of N as A/S+50 lb/ac. of P₂O₅ as Super.</td>
</tr>
<tr>
<td>D₀ = Spacing between bunches : 10'×10'.</td>
<td>D₁ = Spacing between bunches : 5'×9'.</td>
</tr>
<tr>
<td>E₀ = 8 seedlings/bunch.</td>
<td>E₁ = 4 seedlings/bunch.</td>
</tr>
<tr>
<td>F₀ = One hand weeding + no interculturing.</td>
<td>F₁ = One hand weeding +3 interculturings.</td>
</tr>
</tbody>
</table>

3. DESIGN:
(i) 2⁴ confounded Fact. (ii) (a) 8 plots/block and 8 blocks/replication (b) N.A. (iii) 2. (iv) (b) 7'5'×21'.8' and 7'5'×20.8' for 9'×9' spacings respectively. (b) 10'×24' and 10'×24.2' for 9' and 1' spacings respectively. (v) 4 rows round the net plot. (vi) Yes.

4. GENERAL:
(i) Satisfactory in the beginning, lodging afterward. (ii) Attack of Jassid hoppers-controlled by 50%. (iii) Grain and fodder yield. (iv) (a) and (b) No. (c) N.A. (v) (a) and (c) N.A. (vi) and (vii) Nil.

Results on Page (45)
Ref: Gj. 53(102)

5. RESULTS:

(i) 3140 lb./ac.
(ii) 336.5 lb./ac.
(iii) Main effect of C is highly significant, main effect of D is significant, interaction AD is significant. Others are not significant.
(iv) Mean & differential response in lb./ac. (for grain yield).

### Differential response

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean response</th>
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<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<td>-</td>
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</table>

Mean response = -17.09 lb./ac.
Differential response = +50.97 lb./ac.

S.E. of mean response = 59.49 lb./ac.
S.E. of differential response = 84.12 lb./ac.

Ref: Gj. 53(70)

5. RESULTS:

(i) 3130 lb./ac.
(ii) 284.52 lb./ac.
(iii) Main effect of C and interaction AD and BC are significant while others are not significant.
(iv) Mean and differential response in lb./ac. (grain).

### Differential response

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean response</th>
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<th>B</th>
<th>C</th>
<th>D</th>
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<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
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<td>D</td>
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<td>+</td>
<td>+</td>
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</tbody>
</table>

Mean response = +183.64 lb./ac.
Differential response = +87.13 lb./ac.

S.E. of mean response = 50.30 lb./ac.
S.E. of differential response = 71.12 lb./ac.
Crop: Paddy (Kharij).

Object: To find out the proper spacing, manural dose and method of sowing.

1. BASAL CONDITIONS:
   (i) (a) Paddy—Nagli. (b) Nagli. (c) N.A. (ii) (a) Light and brownish soil. (b) N.A. (iii) 25.6.1953.
   (iv) (a) 2 ploughings and 2 harrowings. (b) to c: As per treatments. (v) 3 C.L./ac. of P.F.M.
   (vi) E.K.—70 (early). (vii) Irrigated. (viii) Inter-cultivations as per treatments. (ix) 64°. (x) 14.10.1953.

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 2 manures: M₁ = 64 lb./ac. of N + 32 lb./ac. of P₂O₅ and M₂ = 130 lb./ac. of N + 80 lb./ac. of P₂O₅.
   (2) 8 cultural practices:
   C₁ = Drilling at 60 lb./ac. with 3 intercultivations and 15" spacing.
   C₂ = Drilling at 60 lb./ac. with 3 intercultivations and 12" spacing.
   C₃ = Drilling at 60 lb./ac. with 5 intercultivations and 15" spacing.
   C₄ = Drilling at 60 lb./ac. with 5 intercultivations and 12" spacing.
   C₅ = Drilling at 6 seeds/dibble with 9" x 9" spacing and 3 intercultivations one way.
   C₆ = Drilling at 6 seeds/dibble with 9" x 9" spacing and 3 intercultivations both ways.
   C₇ = Drilling at 6 seeds/dibble with 9" x 9" spacing and 5 intercultivations one way.
   C₈ = Drilling at 6 seeds/dibble with 9" x 9" spacing and 5 intercultivations both ways.

3. DESIGN:
   (i) 2 x 8 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 5. (iv) (a) 10.5 x 7.5'. (b) 15' x 4.5'. (v) 1' x 1'.
   (vi) Yes.

4. GENERAL:
   (i) Satisfactory in early stages. However due to dry weather in September, the grain formation suffered much.
   (ii) Crop damaged slightly by rats and birds. (iii) Grain yield. (iv) (a) and (b) N.A. (c) N.A.
   (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 609 lb./ac.
   (ii) 133.4 lb./ac.
   (iii) All effects are highly significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>M₁</th>
<th>M₂</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₁</td>
<td>730</td>
<td>370</td>
<td>550</td>
</tr>
<tr>
<td>C₂</td>
<td>780</td>
<td>510</td>
<td>645</td>
</tr>
<tr>
<td>C₃</td>
<td>510</td>
<td>555</td>
<td>533</td>
</tr>
<tr>
<td>C₄</td>
<td>625</td>
<td>285</td>
<td>405</td>
</tr>
<tr>
<td>C₅</td>
<td>730</td>
<td>380</td>
<td>635</td>
</tr>
<tr>
<td>C₆</td>
<td>910</td>
<td>715</td>
<td>813</td>
</tr>
<tr>
<td>C₇</td>
<td>470</td>
<td>675</td>
<td>573</td>
</tr>
<tr>
<td>C₈</td>
<td>620</td>
<td>341</td>
<td>480</td>
</tr>
</tbody>
</table>

Mean                             689  529  607

S.E. of marginal mean of M       27.1 lb./ac.
S.E. of marginal mean of C       54.2 lb./ac.
S.E. of body of table            76.7 lb./ac.
Object:—To study the suitability of calcium cyanamide as a source of N in place of A/S and its effect on Wheat crop.

1. BASAL CONDITIONS:
   (i) (a) Bajra-Groundnut (Kharif) and Wheat (Rabi)—Cotton. (b) Gram. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 12.11.1953. (iv) (a) 2 harrowings. (b) Drilling. (c) 60 lb./ac. (d) S. (e) —. (v) 5 C.L./ac. of F.Y.M. in the month of October. (vi) Medium. (vii) Irrigated. (viii) 21.3.1954.

2. TREATMENTS:
   1. 40 lb./ac. of N as A/S.
   2. 40 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
   3. 40 lb./ac. of N as calcium cyanamide.
   4. 40 lb./ac. of N as calcium cyanamide and G.N.C. in 1 : 1 ratio.
Manures applied at the time of sowing.

3. DESIGN:
   (i) R.B.D. (ii) 4. (b) N.A. (iii) 6. (iv) (a) 35'x13.5'. (b) 30'x9.8'. (v) Yes. (vi) Yes.

4. GENERAL:
   (i) Nil. (ii) Nil. (iii) Grain yield. (iv) (a) 1953-continued. (b) N.A. (c) N.A. (d) N.A. (e) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 1629 lb./ac.
   (ii) 744.6 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1700</td>
</tr>
<tr>
<td>2.</td>
<td>1550</td>
</tr>
<tr>
<td>3.</td>
<td>1515</td>
</tr>
<tr>
<td>4.</td>
<td>1710</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>303.8 lb./ac.</td>
</tr>
</tbody>
</table>

Object:—To see the effect of application of F.Y.M. at different intervals on the yield of Wheat.

1. BASAL CONDITIONS:
   (i) Nil. (b) Gram. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 15.10.1951. (iv) (a) 4 harrowings. (b) to (e) N.A. (v) Nil. (vi) A-206. (medium). (vii) Unirrigated. (viii) 1 weeding. (ix) Rabi season hence negligible. (x) N.A.

2. TREATMENTS:
   1. Control (no manure)
   2. 5 C.L./ac. of F.Y.M. every year.
   3. 5 C.L./ac. of F.Y.M. every alternate year commencing from 1952.
   4. 5 C.L./ac. of F.Y.M. every alternate year commencing from 1953.
   5. 5 C.L./ac. of F.Y.M. every third year commencing from 1952.
   6. 5 C.L./ac. of F.Y.M. every third year commencing from 1953.
   7. 5 C.L./ac. of F.Y.M. every third year commencing from 1954.

This year, the treatments 4, 6 and 7 are not applied hence (they reduced to control; and 2, 3 and 5 are identical hence there are only two distinctive treatments). M1=Control—4 plots/replication (treatments 1, 4, 6 and 7) and M2=5 C.L./ac. of F.Y.M.—3 plots/replication (treatments 2, 3 and 5).
3. DESIGN:
(i) R.B.D. (ii) (a) 7, (b) N.A. (iii) 6, (iv) (a) 36'×16', (b) 30'×10'. (v) 3' all round the net plot. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1957. (b) Yes, (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was analysed as R.B.D. with 2 distinctive treatments 0 and 5 C.L./ac of F.Y.M. with 5 replications, as this was the first year of the experiment.

5. RESULTS:
(i) .04 lb./ac. (ii) 81.75 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.
<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>M_1</td>
<td>513</td>
</tr>
<tr>
<td>M_2</td>
<td>493</td>
</tr>
<tr>
<td>S.E./mean (M_1)</td>
<td>16.69 lb./ac.</td>
</tr>
<tr>
<td>S.E./mean (M_2)</td>
<td>19.26 lb./ac.</td>
</tr>
</tbody>
</table>

Object:—To see the effect of application of F.Y.M. at different intervals on the yield of Wheat.

1. BASAL CONDITIONS:
(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Armei. (iii) 24.10.1953. (iv) (a) 5 harrowings prior to sowing. (b) Sowing by drilling with 3 coultured seed drill. (c) 10 lb./ac. (d) Between rows 12'. (e) N.A. (v) As per treatment. (vi) A—206 (medium). (vii) Unirrigated. (viii) Weeding. (x) Rabi season, hence negligible. (x) 21.2.124.

2. TREATMENTS:
1. Control (no manure).
2. 5 C.L./ac of F.Y.M. every year.
3. 5 C.L./ac of F.Y.M. every alternate year commencing from 1952.
4. 5 C.L./ac of F.Y.M. every alternate year commencing from 1953.
5. 5 C.L./ac of F.Y.M. every third year commencing from 1952.
6. 5 C.L./ac of F.Y.M. every third year commencing from 1953.
7. 5 C.L./ac of F.Y.M. every third year commencing from 1954.

For this year, treatments reduce to 4 distinct treatments as given below:

- M_1 = Control : 2 plots/replication (treatment (1) and (7)).
- M_2 = 5 C.L./ac of F.Y.M. (with manuring in previous year) (treatment 2) : one plot/replication.
- M_3 = Residual effect of 5 C.L./ac of F.Y.M. applied in 1953: and 2 plots/replication (treatments (3) and (5)).
- M_4 = 5 C.L./ac of F.Y.M. (without manuring in the previous year) : 2 plots/replication (treatments (4) and (6)).

3. DESIGN:
(i) R.B.D. (ii) (a) 7, (b) N.A. (iii) 6, (iv) (a) 36'×16', (b) 30'×10'. (v) 3' all round the net plot. (vi) Yes.

4. GENERAL:
(i) Good germination and stand of crop was fair. (ii) Nil. (iii) No. (iv) (a) 1952—1957. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) The cloudy weather at milk stage affected the grain size and maturity (vii) Nil.

5. RESULTS:
(i) 1022 lb./ac. (ii) 66.75 lb./ac. (iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>M_1</td>
<td>1008</td>
</tr>
<tr>
<td>M_2</td>
<td>1073</td>
</tr>
<tr>
<td>M_3</td>
<td>1024</td>
</tr>
<tr>
<td>M_4</td>
<td>1006</td>
</tr>
</tbody>
</table>

S.E./mean (for M_2) = 27.27 lb./ac.
S.E./mean (for others) = 19.28 lb./ac.

Crop: Wheat (Rabi).

Ref: Gj. 53(304).
Type: ‘M’.

Object: To study the suitability of calcium cyanamide as a source of N and its effect on yield.

1. BASAL CONDITIONS:
   (i) (a) to (c) N.A. (ii) (a) Light brown. (b) Refer soil analysis, Dohad. (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) Pusa-4. (vii) Irrigated. (viii) N.A. (ix) Rabi season, hence negligible. (x) N.A.

2. TREATMENTS:
   1. Control (no manure).
   2. 40 lb./ac. of N as A/S.
   3. 40 lb./ac. of N as A/S+G.N.C in 1:1 ratio.
   4. 40 lb./ac. of N as calcium cyanamide.
   5. 40 lb./ac. of N as calcium cyanamide+G.N.C in 1:1 ratio.

3. DESIGN:
   (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 20’x33’; (v) N.A. (vi) Yes.

4. GENERAL:
   (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 1258 lb./ac.
   (ii) 132.3 lb./ac.
   (iii) Treatments differ highly significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>863</td>
</tr>
<tr>
<td>2.</td>
<td>1520</td>
</tr>
<tr>
<td>3.</td>
<td>1413</td>
</tr>
<tr>
<td>4.</td>
<td>1147</td>
</tr>
<tr>
<td>5.</td>
<td>1346</td>
</tr>
</tbody>
</table>

S.E./mean = 93.6 lb./ac.

Crop: Wheat. (Rabi).

Ref: Gj. 53(305).
Type: ‘M’.

Object: To study the effect of Saan green manuring on Wheat (Feeler trial).

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Light brown. (b) Refer soil analysis, Dohad. (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) Pusa—4. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS
   1. Control (no G.M.)
   2. Saan crop grown and buried along with tender tops and leaves.
   3. Saan crop grown, cut and left as such.
   4. The leaves and tender tops from treatment (3) buried.
3. DESIGN:
(i) R B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 33' x 33'. (b) 23' x 23'. (v) 5' alround the net plot. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) No (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:
(i) 1884 lb./ac.
(ii) 357.4 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1845</td>
</tr>
<tr>
<td>2.</td>
<td>1884</td>
</tr>
<tr>
<td>3.</td>
<td>1647</td>
</tr>
<tr>
<td>4.</td>
<td>2151</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>-252.7 lb./ac.</td>
</tr>
</tbody>
</table>

Crop : Wheat. (Rabi).

Object : To ascertain the manurial requirements of Wheat crop.

1. BASAL CONDITIONS:
(i) (a) Bajra-Wheat. (b) Bajra. (c) 5 C.L. bigha. of F.Y.M. (ii) (a) Light sandy soil. (b) N.A. (iii) 11.11.1948. (iv) (a) to (e) N.A. (v) Nil. (vi) Irrigated. (vii) N.A. (ix) Rabi season, hence negligible. (x) 12.3.1949.

2. TREATMENTS:
1. No manure (Control).
2. 20 lb./bigha of N as A/S.
3. 20 lb./bigha of N as Ammo. Phos.
4. 20 lb./bigha of N as Castor cake.

3. DESIGN:
(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 22' x 19'. (v) Nil. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Attack of white ants and rust was observed. (iii) Grain yield. (iv) (a) 1945—N.A. (b) No. (c) Nil. (v) (a), (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 744 lb./ac.
(ii) 170.6 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>587</td>
</tr>
<tr>
<td>2.</td>
<td>705</td>
</tr>
<tr>
<td>3.</td>
<td>982</td>
</tr>
<tr>
<td>4.</td>
<td>720</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>-69.7 lb./ac.</td>
</tr>
</tbody>
</table>
Crop: Wheat (Rabi).

Object: To ascertain the manurial requirements of Wheat.

1. BASAL CONDITIONS:
   (i) (a) Bajra-Wheat. (b) Bajra. (c) N.A.
   (ii) (a) Light sandy soil. (b) N.A.
   (iii) 21.11.1949. 
   (iv) (a) to (c) N.A. (v) Nil. (vi) C-13 (medium).
   (vii) Irrigated. (viii) N.A. (ix) Rabi season, hence negligible.

2. TREATMENTS:
   1. Control (no manure).
   2. 20 lb./bigha of N as A/S.
   3. 20 lb./bigha of N as Ammo. Phos.
   4. 20 lb./bigha of N as Castor cake.

3. DESIGN:
   (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 50'X20'. (v) Nil.
   (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Slight attack of white ants. (iii) Grain yield.
   (iv) (a) 1945—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. 
   (vi) and (vii) Nil.

5. RESULTS:
   (i) 663 lb./ac.
   (ii) 69.26 lb./ac.

   Treatments differ highly significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>327</td>
</tr>
<tr>
<td>2.</td>
<td>799</td>
</tr>
<tr>
<td>3.</td>
<td>871</td>
</tr>
<tr>
<td>4.</td>
<td>653</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>28.28 lb/</td>
</tr>
</tbody>
</table>

---

Crop: Wheat.
Site: Paliad (Gujarat).

Object: To study the best time of application of N.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) N.A. (c) N.A.
   (ii) (a) Sandy loam to clayey loam in texture, medium black in colour.
   (b) N.A. (iii) 7.11.1953. 
   (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 9'. (e) N.A. (v) N.A. 

2. TREATMENTS:
   All combinations of (1) and (2) + a control (no manure).
   (1) 2 sources of N (at 20 lb./ac.) : S<sub>1</sub>=A/S and S<sub>2</sub>=Urea.
   (2) 2 times of application of N : T<sub>1</sub>=At sowing and T<sub>2</sub>=At first irrigation.

   A basal dose of 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> was given at the time of sowing.

3. DESIGN:
   (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 37'X10.5'. (v) N.A. 
   (vi) Yes.

4. GENERAL:
   (i) Normal. (ii) Slight damage to crop caused by tiny white bugs on leaves and rat trouble.
   (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Kota, Banaras, Pura, Niphad and Satna. 
   (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 2131 lb./ac.
   (ii) 99.39 lb./ac.

   (iii) Main-effects, interaction and control vs others are not significant.
(iv) Av. yield of grain in lb./ac.

Control = 2106 lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>$S_1$</th>
<th>$S_2$</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>$T_1$</td>
<td>2231</td>
<td>2111</td>
<td>2171</td>
</tr>
<tr>
<td>$T_2$</td>
<td>2066</td>
<td>2139</td>
<td>2103</td>
</tr>
<tr>
<td>Mean</td>
<td>2148</td>
<td>2125</td>
<td>2137</td>
</tr>
</tbody>
</table>

S.E. of any marginal mean = 35.15 lb./ac.
S.E. of body of table = 40.70 lb./ac.

Crop: Wheat. Ref: Complex experiments (T.C.M.), 1953.
Site: Paliad (Gujarat). Type: 'M'.

Object: To study the effect of types, levels and method of application of $P_2O_5$.

1. BASAL CONDITIONS:
(i) (a) to (c) N.A. (ii) (a) Sandy to clay loam in texture, medium black in colour (b) N.A. (iii) 8.11.1953. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) V. (e) N.A. (v) N.A. (vi) L.P. 16°. (vii) Irrigated. (viii) One weeding. (ix) 26.06'. (x) N.A.

2. TREATMENTS:
All combinations of (1), (2) and (3) + 2 control plots (no manure)
(1) 3 sources of $P_2O_5$: $S_1$ = Super, $S_2$ = Nitro. Phos. and $S_3$ = Ammon. Phos.
(2) 2 levels of $P_2O_5$: $P_1 = 15$ and $P_2 = 30$ lb./ac.
(3) 2 methods of applications $P_2O_5$: $M_1$ = Broadcast before final cultivation and $M_2$ = 2 lb. below seed. N equalised to 30 lb./ac. of N by applying A/S at the time of sowing.

3. DESIGN:
(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 37° x 0.5'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Slight damage to crop was caused by tiny white bugs and rat pest. (iii) Grain yield. (iv) (a) 1953–56. (b) N.O. (c) N.A. (d) (a) Kosi, Banaras and Pura. (e) N.A. (vi) and (vii) No.

5. RESULTS:
(i) 2204 lb./ac. (ii) 30.0.1 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

Control = 2067 lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>$S_1$</th>
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<th>$S_3$</th>
<th>Mean</th>
<th>$P_1$</th>
<th>$P_2$</th>
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<tbody>
<tr>
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<td>2406</td>
<td>2151</td>
<td>2258</td>
<td>2211</td>
<td>2306</td>
</tr>
<tr>
<td>$M_2$</td>
<td>2246</td>
<td>2190</td>
<td>2153</td>
<td>2196</td>
<td>2201</td>
<td>2192</td>
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<tr>
<td>Mean</td>
<td>2231</td>
<td>2298</td>
<td>2152</td>
<td>2227</td>
<td>2206</td>
<td>2249</td>
</tr>
</tbody>
</table>

S.E. of marginal mean of $S$ = 86.6 lb./ac.
S.E. of marginal mean of $M$ or $P$ = 70.7 lb./ac.
S.E. of body of table $S \times M$ or $S \times P$ = 122.5 lb./ac.
S.E. of body of table $M \times P$ = 100.0 lb./ac.
S.E. of control mean = 122.5 lb./ac.
Crop : Wheat.

Ref : Complex experiments (T.C.M.), 1953.

Centre : Paliad (Gujarat).

Type : 'M'.

Object : (i) To study the residual value of phosphatic manures.

1. BASAL CONDITIONS:
   (i) (a) to (c) N.A. (ii) Sandy to clay loam in texture, medium black in colour. (b) N.A. (iii) 22.11.1953. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 9°. (e) N.A. (v) N.A. (vi) Kenphad. (vii) Irrigated. (viii) One weeding. (ix) 26.06°. (x) N.A.

2. TREATMENTS:
   5 treatments replicated as follows:
   1. O = Untreated. 1 plot/block.
   2. C = Control. 6 plots/block.
   3. P1 = 1 unit dressing 1 plot/block.
   4. P2 = Unit dressing. 2 plots/block.
   5. P3 = Double dressing. 2 plots/block.

UNIT DOSSING : 20 lb./ac. of P10 as Triple Super.
A basal dressing of 20 lb./ac. of N as A/S given to all treatments except treatment (1). Manures applied at the time of sowing.

3. DESIGN:
   (i) R.B.D. (ii) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 37° × 10.5°. (v) N.A. (vi) Nil.

4. GENERAL:
   (i) Normal. (ii) Slight damage to crop caused by rats and stem borer. (iii) Grain yield. (iv) (a) 1953—56. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS:
   (i) 1929 lb./ac.
   (ii) 165.6 lb./ac.
   (iii) Treatment differences are not significant.
   (iv) Av. yield of grain in lb./ac.

   Treatment O C P1 P2 P3
   Av. yield 1878 1987 1683 1972 1864
   S.E./mean 117.1 47.8 117.1 82.8 82.8

Crop : Licerene.

(i) 271.3 md/ac.
(ii) 18.40 md/ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of grain in md./ac.

   Treatment O C P1 P2 P3
   Av. yield 232.53 245.03 299.48 297.21 329.54
   S.E./mean 13.01 5.3 13.01 9.2 9.2

Crop : Wheat.

Ref : Complex experiments (T.C.M.), 1953.

Centre : Paliad (Gujarat).

Type : 'M'.

Object : (i) To study the effect of types and levels of N and P104 on non-acidic soils.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) N.A. (c) N.A. (ii) Sandy to clay loam in texture, medium black in colour. (b) N.A. (iii) 12.11.1953. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 9°. (e) N.A. (v) N.A. (vi) NP-710. (vii) Irrigated. (viii) One weeding. (ix) 26.06°. (x) March, 1954.

2. TREATMENTS:
   All combinations of (1), (2) and (3)
   (1) 3 levels of N : N0=0, N1=20 and N2=40 lb./ac.
   (2) 2 sources of N : S1=A/S and S2=Urea.
   (3) 3 levels of P3O5 (as Triple Super) : P0=0, P1=20 and P2=40 lb./ac.

Triple Super applied 10 days before sowing and N applied at the time of sowing.
3. DESIGN:
(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 37'x10.5'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Crop was slightly damaged by tiny white bugs on leaves and rat pests. (iii) Grain yield. (iv) (a) 1953 to 1956. (b) No. (c) N.A. (v) (a) Banaras, Pura. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:
(i) 2368 lb./ac.
(ii) 195.7 lb./ac.
(iii) Main effects and interactions are not significant.

<table>
<thead>
<tr>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>Mean</th>
<th>S1</th>
<th>S2</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>2263</td>
<td>2314</td>
<td>2124</td>
<td>2308</td>
<td>2394</td>
<td>2244</td>
<td>2310</td>
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<tr>
<td>2273</td>
<td>2356</td>
<td>2164</td>
<td>2359</td>
<td>2426</td>
<td>2344</td>
<td>2380</td>
</tr>
<tr>
<td>2482</td>
<td>2466</td>
<td>2448</td>
<td>2438</td>
<td>2446</td>
<td>2408</td>
<td>2427</td>
</tr>
</tbody>
</table>

Mean: 2339 2372 2379 2308 2394 2244 2310

For table 'N x P':
S.E. of marginal mean of column No. = 6.2 lb./ac.
S.E. of marginal mean of column (N1, N2) = 46.1 lb./ac.
S.E. of marginal mean of row = 50.6 lb./ac.

For table 'P x S':
S.E. of marginal mean of column = 46.1 lb./ac.
S.E. of marginal mean of row = 56.5 lb./ac.
S.E. of body of table = 79.5 lb./ac.

For table 'S x N':
S.E. of marginal mean (row or column) = 46.1 lb./ac.
S.E. of body of table = 65.2 lb./ac.

Centre: Rajkot (Gujarat). Type 'N'.
Object: To study the effect of different levels and sources of N.

1. BASAL CONDITIONS:

2. TREATMENTS:
O = Control.
N1 = A/S at 20 lb./ac. of N.
N2 = A/S at 40 lb./ac. of N.

3. DESIGN:
(i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out. (iii) N.A. (iv) Yes.

4. GENERAL:
5. RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield in lb./ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>1388</td>
</tr>
<tr>
<td>N₁</td>
<td>1486</td>
</tr>
<tr>
<td>N₂</td>
<td>1584</td>
</tr>
<tr>
<td>G.M.</td>
<td>=1446</td>
</tr>
<tr>
<td>S.E. for control</td>
<td>=24.10</td>
</tr>
<tr>
<td>S.E. for others</td>
<td>=41.72</td>
</tr>
<tr>
<td>No. of experiments</td>
<td>13</td>
</tr>
</tbody>
</table>

Crop :- Wheat  
Ref :- Simple trials on cultivators, fields (T.C.M.), 1953.
Centre :- Rajkot (Gujarat)  
Type :- ‘M’.

Object :- I (a) (iii) To study the effect of different levels and sources of N.

1. BASAL CONDITIONS:
   (i) (a) N.A.  (b) N.A.  (c) N.A.  (ii) Medium black-clay loam—pH 8.3.  (iii) Nil.  (iv) Improved variety.

2. TREATMENTS:
   O =Control.
   N₁' =Urea at 20 lb./ac. of N.
   N₂' =Urea at 40 lb./ac. of N.

3. DESIGN:
   (i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out. (iii) N.A.  (iv) Yes.

4. GENERAL:
   (vii) Nil.

5. RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield in lb./ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>1405</td>
</tr>
<tr>
<td>N₁'</td>
<td>1600</td>
</tr>
<tr>
<td>N₂'</td>
<td>1605</td>
</tr>
<tr>
<td>G.M.</td>
<td>=1484</td>
</tr>
<tr>
<td>S.E. for control</td>
<td>=31.18 lb./ac.</td>
</tr>
<tr>
<td>S.F. for others</td>
<td>=55.54 lb./ac.</td>
</tr>
<tr>
<td>No. of experiments</td>
<td>17</td>
</tr>
</tbody>
</table>

Crop :- Wheat.  
Ref :- Simple trials on cultivator’s fields (T.C.M.), 1953.  
Centre :- Rajkot (Gujarat).  
Type :- ‘M’.

Object :- I (b) (i) To study different levels and types of N and P₂O₅.

1. BASAL CONDITIONS:
   (i) (a) N.A.  (b) N.A.  (c) N.A.  (ii) Medium black-clay loam—pH 8.3.  (iii) Nil.  (iv) Improved variety.

2. TREATMENTS:
   O =Control.
   P =Super at 20 lb./ac. of P₂O₅.
   N₁P =A/S at 20 lb./ac. of N + 20 lb./ac. of P₂O₅ as Super.
   N₂P =A/S at 40 lb./ac. of N + 20 lb./ac. of P₂O₅ as Super.
3. DESIGN:

(i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out. (iii) N.A. (iv) Yes.

4. GENERAL:


5. RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield in lb./ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1192</td>
</tr>
<tr>
<td>P</td>
<td>1325</td>
</tr>
<tr>
<td>N1P</td>
<td>1423</td>
</tr>
<tr>
<td>N2P</td>
<td>1477</td>
</tr>
<tr>
<td>G.M.</td>
<td>1321</td>
</tr>
</tbody>
</table>

S.E. for control 32.50 lb./ac.
S.E. for others 45.99 lb./ac.
No. of experiments 16

Crop:— Wheat.  
Ref:— Simple trials on cultivator’s fields (T.C.M.), 1953.  
Centre:— Rajkot (Gujarat).  
Type:— ‘M’.

Object:— (1) To study different levels and types of N and P2O5.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Medium black—clay loam—pH 8.3 (iii) Nil. (iv) Improved variety. (v) N.A. (vi) October-November. (vi) Irrigated. (vii) N.A. (ix) N.A. (x) March.

2. TREATMENTS:

0 = Control.

P = 20 lb./ac. of P2O5 as Super.

N1P = Urea at 20 lb./ac. of N + 20 lb./ac. of P2O5 as Super.

N2P = Urea at 40 lb./ac. of N + 20 lb./ac. of P2O5 as Super.

3. DESIGN:

(i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out. (iii) N.A. (iv) Yes.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield in lb./ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1543</td>
</tr>
<tr>
<td>P</td>
<td>1651</td>
</tr>
<tr>
<td>N1P</td>
<td>1649</td>
</tr>
<tr>
<td>N2P</td>
<td>1697</td>
</tr>
<tr>
<td>G.M.</td>
<td>1617</td>
</tr>
</tbody>
</table>

S.E. for control 23.53 lb./ac.
S.E. for others 33.32 lb./ac.
No. of experiments 14
Crop :- Wheat. Ref :- Simple trials on cultivator's fields (T.C.M.), 1953.
Centre :- Rajkot (Gujarat). Type :- 'M'.

Object :- (iv) (ii), To study different levels and types of N and P$_2$O$_5$

1. BASAL CONDITIONS:
(i) (a) N.A. (b) and (c) N.A. (ii) Medium black-clay loam—pH 8.3. (iii) Nil. (iv) Improved variety. (v) N.A. (vi) October-November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March.

2. TREATMENTS:
O = Control.
P = 20 lb./ac. of P$_2$O$_5$ as Super.
N$_1$P = A/S at 20 lb./ac. of N+20 lb./ac. of P$_2$O$_5$ as Super.
N$_2$P = A/S at 40 lb./ac. of N+20 lb./ac. of P$_2$O$_5$ as Super.

3. DESIGN:
(i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat for each selected village was prepared. From this list, two cultivator's were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out. (iii) N.A. (iv) Yes.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield in lb./ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>1562</td>
</tr>
<tr>
<td>P</td>
<td>1638</td>
</tr>
<tr>
<td>N$_1$P</td>
<td>1595</td>
</tr>
<tr>
<td>N$_2$P</td>
<td>1720</td>
</tr>
<tr>
<td>N$_1$'P</td>
<td>1674</td>
</tr>
<tr>
<td>G.M.</td>
<td>1638</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>49.37 lb./ac.</td>
</tr>
</tbody>
</table>

No. of experiments 12

Crop :- Wheat. Ref :- Simple trials on cultivator's fields (T.C.M.), 1953.
Centre :- Rajkot (Gujarat). Type :- 'M'.

Object :- (iv) (ii), To study the effects of types and levels of P$_2$O$_5$ and N.

1. BASAL CONDITIONS:

2. TREATMENTS:
O = Control.
N = A/S at 40 lb./ac. of N.
N$_1$P = A/S at 40 lb./ac. of N+Super at 20 lb./ac. of P$_2$O$_5$.
N$_2$P = A/S at 40 lb./ac. of N+Super at 40 lb./ac. of P$_2$O$_5$.
N$_1$P$'$ = (A/S+Ammon. Phot.) at 40 lb./ac. of N+20 lb./ac. of P$_2$O$_5$.
N$_2$P$'$ = (A/S+Ammon. Phot.) at 40 lb./ac. of N+40 lb./ac. of P$_2$O$_5$.

3. DESIGN:
(i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country, were selected. Form each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat for each selected village was prepared. Form this, list two cultivator's were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out. (iii) N.A. (iv) Yes.
4. GENERAL:

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953–1956. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield in lb./ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>1336</td>
</tr>
<tr>
<td>N</td>
<td>1479</td>
</tr>
<tr>
<td>NP₁</td>
<td>1409</td>
</tr>
<tr>
<td>NP₂</td>
<td>1498</td>
</tr>
<tr>
<td>NP₁'</td>
<td>1495</td>
</tr>
<tr>
<td>NP₂'</td>
<td>1525</td>
</tr>
<tr>
<td>G.M.</td>
<td>1457</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>= 28.72 lb./ac.</td>
</tr>
<tr>
<td>No. of experiments</td>
<td>= 13</td>
</tr>
</tbody>
</table>

Centre: Rajkot (Gujarat). Type: ‘M’.

Object: — (iv) (i). To study the effects of types and levels of P₂O₅ and N.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Medium black-cay loam pH 8.3. (iii) Nil. (iv) Improved variety. 

2. TREATMENTS:

O = Control.
N = APS at 40 lb./ac. of N.
NP₁ = APS at 40 lb./ac. of N + Super at 20 lb./ac. of P₂O₅.
NP₂ = APS at 40 lb./ac. of N + Super at 40 lb./ac. of P₂O₅.
NP₁' = APS + Nitro. Phos) at 40 lb./ac. of N + 30 lb./ac. of P₂O₅.
NP₂' = APS + Nitro. Phos) at 40 lb./ac. of N + 40 lb./ac. of P₂O₅.

3. DESIGN:

(i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat for each selected village was prepared. From this list two cultivator’s were selected at random and one old and each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out. (iii) N.A. (iv) Yes.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) 1953–1956. (b) No. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield in lb./ac.</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>1479</td>
</tr>
<tr>
<td>N</td>
<td>1597</td>
</tr>
<tr>
<td>NP₁</td>
<td>1622</td>
</tr>
<tr>
<td>NP₂</td>
<td>1802</td>
</tr>
<tr>
<td>NP₁'</td>
<td>1637</td>
</tr>
<tr>
<td>NP₂'</td>
<td>1712</td>
</tr>
<tr>
<td>G.M.</td>
<td>1641</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>= 65.58 lb./ac.</td>
</tr>
<tr>
<td>No. of experiments</td>
<td>= 13</td>
</tr>
</tbody>
</table>
Crop :- Wheat.

Ref :- Simple trials on cultivator's fields (T.C.M.; 1953).
Centre :- Rajkot (Gujarat).
Type :- 'M'.

Object :- IV (v), To study the different sources and levels of $P_2O_5$ and N.

1. BASAL CONDITIONS:

2. TREATMENTS:
   
   O = Control.
   
   $N = A/S$ at 40 lb./ac. of $N$

   $NP_1 = (A/S+Nitro. phos.) at 40 lb./ac. of N+20 lb./ac. of $P_2O_5$ as Super.

   $NP_2 = (A/S+Nitro. phos.) at 40 lb./ac. of N+40 lb./ac. of $P_2O_5$ as Super.

   $NP'1 = (A/S+Ammon. phos.) at 40 lb./ac. of N+20 lb./ac. of $P_2O_5$ as Super.

   $NP'2 = (A/S+Ammon. phos.) at 40 lb./ac. of N+40 lb./ac. of $P_2O_5$ as Super.

3. DESIGN:
   (i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat for each selected village was prepared. From this list, two cultivator’s were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out. (iii) N.A. (iv) Yes.

4. GENERAL:

5. RESULTS:

   Treatment | Av. yield in lb./ac.
   -----------|---------------------
   0          | 1362                
   $N$        | 1382                
   $NP_1$     | 1446                
   $NP_2$     | 1469                
   $NP'1$     | 1562                
   $NP'2$     | 1538                

   G.M. = 1453
   S.E./mean = 55.54 lb./ac.
   No. of experiments = 13

Crop :- Wheat.

Ref :- Complex experiments (T.C.M.) 1953.
Centre :- Paliad (Gujarat).
Type :- 'MV'.

Object :- VIII, To study the effect of $N$ and $P_2O_5$ along with varieties.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy to clay loam medium black in colour. (b) N.A. (iii) 14.11.1953. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 9°. (c) N.A. (e) N.A. (f) Nil. (g) Irrigated. (h) One weeding. (i) 26.06°. (j) N.A.

2. TREATMENTS:
   All combinations of (1), (2) and (3)
   (1) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
   (2) 3 levels of $P_2O_5$ : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
   (3) 3 varieties : $V_1=Local$, $V_2=Kenphad$ and $V_3=N.P. 715$.

   N as A/S and $P_2O_5$ as Triple Super.

   A/S broadcast at the time of sowing and $P_2O_5$ at the time of ploughing in between two sowing dates.

3. DESIGN:
   (i) 3² Fact. in R.B.D. (confounded). (ii) (a) 9 plots/block ; 3 blocks/repetition (b) N.A. (iii) 1. (iv) (a) N.A. (b) 37'×10.5'. (v) N.A. (vi) Yes.
4. GENERAL:
(i) Normal. (ii) Slight attack of tiny white bugs and rat pests. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Kotah, Banaras, Pura and Niphad. (b) No. (vi) Nil. (vii) Nil.

5. RESULTS:
(i) 2183 lb/ac.
(ii) 134.6 lb/ac.
(iii) Only interaction PV is significant.
(iv) Av. yield of grain in lb/ac.

<table>
<thead>
<tr>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>Mean</th>
<th>V₁</th>
<th>V₂</th>
<th>V₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>2154</td>
<td>2322</td>
<td>2217</td>
<td>2231</td>
<td>2211</td>
<td>1994</td>
<td>2489</td>
</tr>
<tr>
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<td>2181</td>
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<td>2251</td>
<td>2170</td>
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<td>2279</td>
<td>2074</td>
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</tbody>
</table>

Mean 2123 2208 2217 2183 2207 2039 2252

S.E. of any marginal means = 44.9 lb/ac.
S.E. of body of table = 77.8 lb/ac.

Crop :—Wheat. Centre :—Paliad (Gujarat). Ref :—Complex experiments (T. C. M.), 1953. Type :—‘MV’.
Object :—VII, To study the effect of irrigation along with manures.

1. BASAL CONDITIONS:
(i) (a) Sandy to clay loam in texture, medium black in colour. (b) N.A. (iii) 12.11.1953. (iv) (a) N. (b) Drilled. (c) 80 lb/ac. (d) 2'. (e) N.A. (v) N.A. (vi) NP—715. (vii) Irrigated. (viii) One weeding. (ix) 23.06'. (x) N.A.

2. TREATMENTS:
All combinations of (1), (2) and (3)
(1) 3 levels of N : N₀ = 0, N₁ = 20 and N₂ = 40 lb/ac.
(2) 3 levels of P₂O₅ : P₀ = 0, P₁ = 20 and P₂ = 40 lb/ac.
(3) 3 levels of Irrigation : I₁ = 8 days interval, I₂ = 12 days interval and I₃ = 16 days interval. N as A/S and P₂O₅ as triple Super. A/S broadcast at the time of sowing and P₂O₅ applied at the time of ploughing in between two sowing dates.

3. DESIGN:
(i) 3² Fact. in R.B.D. (confounded). (ii) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 1.
(iv) (a) N.A. (b) 3' x 10.5'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Attack of tiny white bugs on leaves. Attack of stemborer and rat pests; no specific damage to crop. (iii) Grain yield. (iv) (a) 1953—56. (b) No. (c) N.A. (v) (a) Kotah, Banaras, Pura, (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 2335 lb/ac.
(ii) 227.9 lb/ac.
(iii) None of the effects is significant.
Crop:- Wheat (Rabi).


Object:- To study the economic seed rate for irrigated Wheat in this tract.

1. BASAL CONDITIONS:
   (i) (a) Bajra—Groundnut (Khargif) and Wheat (Rabi)—Cotton. (b) Groundnut. (c) 5 C.L./ac. of F.Y.M.
   (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 5.11.1953. (iv) (a) 2 borrowings. (b) Drilled.
   (c) As per treatments. (d) 9°. (e) =. (v) 5 C.L./ac. of F.Y.M. in the month of October:

2. TREATMENTS:
   5 seed rates: R₁ = 40, R₂ = 60, R₃ = 80, R₄ = 100 and R₅ = 120 lb./ac.

3. DESIGN:
   (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 26' × 13.5'. (b) 21' × 9.8'. (v) Yes. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Slight attack of rust. (iii) Grain yield. (iv) (a) 1951—continued. (b) Yes (c) N.A. (v)
   (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 890 lb./ac.
   (ii) 146.8 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
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<tbody>
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<tr>
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<tr>
<td>R₄</td>
<td>854</td>
</tr>
<tr>
<td>R₅</td>
<td>921</td>
</tr>
</tbody>
</table>

S.E./mean = 65.7 lb./ac.
Crop : - Wheat (Rabi).


Ref : - Gj. 48(37).

Type : - 'C'.

Object : - To find out the suitable and economic seed rate and spacing for Wheat.

1. BASAL CONDITIONS :
   (i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) N.A.
   (iv) (a) and (b) N.A. (c) and (d) As per treatments. (c) N.A. (v) Nil. (vi) Gulab (medium). (vii) Un-irrigated. (viii) Nil. (ix) Rabi season hence negligible. (x) N.A.

2. TREATMENTS :
   Main-plot treatments :
   3 spacings between rows : $S_1 = 12'$, $S_2 = 15'$ and $S_3 = 18'$.
   Sub-plot treatments :
   4 seed rates : $R_1 = 30$, $R_2 = 40$, $R_3 = 50$ and $R_4 = 60$ lb./ac.

3. DESIGN :
   (i) Split-plot. (ii) (a) 3 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 40'x20' for 12' and 15' spacing and 40'x21' for 18' spacing. (b) 35'x15'. (v) 2'x2' for 12' and 15' spacing and 2'x3' for 18' spacing. (vi) Yes.

4. GENERAL :
   (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947-1949 (further modified in 1950-1951). (b) No. (c) N.A. (v) (a) Bhuwa. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :
   (i) 233 lb./ac.
   (ii) (a) 54.35 lb./ac.
   (b) 70.59 lb./ac.
   (iii) None of the effects is significant.
   (iv) Av. yield of grain in lb./ac.

<table>
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<tr>
<th></th>
<th>$S_1$</th>
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<td>205</td>
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<td>$R_2$</td>
<td>238</td>
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<td>246</td>
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<td>$R_3$</td>
<td>225</td>
<td>226</td>
<td>266</td>
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<td>$R_4$</td>
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<td>223</td>
<td>219</td>
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<tr>
<td>Mean</td>
<td>234</td>
<td>236</td>
<td>230</td>
<td>233</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. spacing marginal means = 15.68 lb./ac.
2. seed rate marginal means = 23.54 lb./ac.
3. seed rate means at the same level of spacing = 40.74 lb./ac.
4. spacing means at the same level of seed rate = 33.60 lb./ac.

---

Crop : - Wheat (Rabi).


Ref : - Gj. 48(64).

Type : - 'C'.

Object : - To find out suitable and economic seed rate and spacing for Wheat.

1. BASAL CONDITIONS :
   (i) (a) N.A. (b) Wheat. (c) 5 C.L./ac. of F.Y.M. (d) Medium black. (b) Refer soil analysis, Arnej. (iii) 27.10.1949. (iv) (a) and (b) N.A. (c) and (d) As per treatments. (c) N.A. (v) Nil. (vi) Gulab (medium). (vii) Unirrigated. (viii) Nil. (ix) Rabi season, hence negligible. (x) N.A.

2. TREATMENTS :
   Main-plot treatments :
   3 spacings between rows : $S_1 = 12'$, $S_2 = 15'$ and $S_3 = 18'$.
   Sub-plot treatments :
   4 seed rates : $R_1 = 30$, $R_2 = 40$, $R_3 = 50$ and $R_4 = 60$ lb./ac.
3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 40'x19' for 12", 40'x20' for 15" and 40'x21' for 18" spacing respectively. (b) 36'x5'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947—1949. (Further modified in 1952-1953). (b) No. (c) N.A. (v) (a) Bhuwa and Jalagaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 644 lb./ac.
(ii) (a) 41.04 lb./ac. (b) 89.93 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
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<td>605</td>
<td>603</td>
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<tr>
<td>R4</td>
<td>681</td>
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<td>652</td>
<td>660</td>
</tr>
</tbody>
</table>

Mean 659 631 641 644

S.E. of difference of two
1. S marginal means = 11.82 lb./ac.
2. R marginal means = 29.98 lb./ac.
3. R means at the same level of S = 51.92 lb./ac.
4. S means at the same level of R = 46.72 lb./ac.

Crop : Wheat (Rabi).
Ref : Gj. 52(83).
Type : 'C'.

Object : To find out suitable spacing and economic seed rate for Wheat.

1. BASAL CONDITIONS:
(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 24 10.1952. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) A—206. (vii) Unirrigated. (viii) Weeding. (ix) Rabi reason hence negligible. (x) 21 2.1953.

2. TREATMENTS:
Main-plot treatments:
3 seed rates: R1=30, R2=40 and R3=50 lb./ac.
Sub-plot treatments:
2 spacings: S1=9" and S2=12".

3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots/block ; 2 sub-plots/main-plot. (b) 84'x63'. (iii) 6. (iv) (a) main-plot : 84'x21' and sub-plot: 42'x21'. (b) 36'x15'. (v) 3' all round cet plot. (vi) Yes.

4. GENERAL:
(i) The emergence of the seedlings was good and uniform in all treatments. All the plants in different plots attained maturity at the same time. (ii) Nil. (iii) Weight of grain. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) Bhuwa and Jalagaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 710 lb./ac.
(ii) (a) 67.9 lb./ac. (b) 88.7 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb/ac.

<table>
<thead>
<tr>
<th></th>
<th>R₁</th>
<th>R₂</th>
<th>R₃</th>
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<tbody>
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<tr>
<td>S₂</td>
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<td>704</td>
<td>751</td>
<td>714</td>
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<tr>
<td>Mean</td>
<td>684</td>
<td>702</td>
<td>745</td>
<td>710</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. R marginal means = 25.10 lb/ac.
2. S marginal means = 27.38 lb/ac.
3. S means at the same level of R = 50.82 lb/ac.
4. R means at the same level of S = 44.38 lb/ac.

Crop : Wheat (Rabi)
Site : Agri. Res. Strn., Arnej
Object : To find out the suitable spacing and economic seed rate for Wheat.

1. BASAL CONDITIONS:
(i) (a) Nil, (b) Wheat, (c) Nil, (ii) (a) Medium black to deep black, (b) Refer soil analysis,
(iii) 27.10 1953, (iv) (a) 4 harrowings, (b) Drilling, (c) and (d) As per treatments, (e) N.A.,

2. TREATMENTS:
Main-plot treatments:
3 seed rates: R₁ =30, R₂ =40 and R₃ =50 lb/ac.
Sub-plot treatments:
2 spacings between rows: S₁ =9" and S₂ =12".

3. DESIGN:
(i) Split-plot, (ii) (a) 3 main-plots/block and 2 sub-plots/main-plot, (b) N.A., (iii) 6, (iv) (a)
42’ x 21’ (main-plot: 84’ x 63’), (b) 36’ x 15’ (v) 3 around the net plot, (vi) Yes.

4. GENERAL:
(i) Germination was satisfactory and crop stand was good, (ii) Nil, (iii) Grain yield, (iv) (a) 1952—
1955, (b) No, (c) N.A., (v) (a) Bhawa and Jalagaon, (b) N.A., (vi) The cloudy weather at the time
of milky stage affected the grain size and maturity, (vii) Nil.

5. RESULTS:
(i) 838 lb/ac.
(ii) (a) 53.24 lb/ac.
(b) 55.66 lb/ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb/ac.

<table>
<thead>
<tr>
<th></th>
<th>R₁</th>
<th>R₂</th>
<th>R₃</th>
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<td>835</td>
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<tr>
<td>S₂</td>
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<td>784</td>
<td>842</td>
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<tr>
<td>Mean</td>
<td>859</td>
<td>853</td>
<td>803</td>
<td>838</td>
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</table>

S.E. of difference of two
1. R marginal means = 21.69 lb/ac.
2. S marginal means = 18.61 lb/ac.
3. S means at the same level of R = 32.03 lb/ac.
4. R means at the same level of S = 31.33 lb/ac.
Crop: Wheat (Rabi).

Object: To find the best preparatory tillage for Wheat crop.

1. BASAL CONDITIONS:
   (i) (a) No. (b) Jowar. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 26.10.1953. (iv) (a) As per treatments. (b) Drilling. (c) 40 lb./ac. (d) 12°. (e) N.A. (v) Nil. (vi) A—206. (vii) Unirrigated. (viii) Nil. (ix) Rabi season, hence negligible. (x) 5.3.1951.

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 2 levels of ploughing: L0=No ploughing and L1=One ploughing.
   (2) 4 levels of harrowing: H1=2, H2=3, H3=4 and H4=5 harrowings.
   Date of ploughing —4.10.1950 and dates of harrowings: -4,8,12,16 and 19.10.1950.

3. DESIGN:
   (i) 4x2 Fact. in R.B.D. (ii) (a) 8. (b) 113'x112'. (iii) 4. (iv) (a) 113'x14'. (b) 109'x10'. 'b' 2' all round net plot. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1955. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 676 lb./ac.
   (ii) 61.2 lb./ac.
   (iii) Main effect of ploughing alone is highly significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>H1</th>
<th>H2</th>
<th>H3</th>
<th>H4</th>
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<td>701</td>
<td>713</td>
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<tr>
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<td>672</td>
<td>630</td>
<td>680</td>
<td>672</td>
<td>676</td>
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</table>

S.E. of marginal mean of H =21.60 lb./ac.
S.E. of marginal mean of L =15.30 lb./ac.
S.E. of body of table =30.60 lb./ac.
4. GENERAL:
   (i) The germination was good in plots receiving 4 and 5 harrowings; and was not good in plots receiving 2 and 3 harrowings. There was however no difference between treatments in the later phase of plant development. (ii) Nil. (iii) Grain yield (iv) (a) 1950—1955. (b) No. (c) N.A. (v) (a) No. (b) Nil. (vi) Nil. (vii) The experiment was visited in 1951.

5. RESULTS:
   (i) 400 lb./acre.
   (ii) 59.04 lb./acre.
   (iii) The main effect of harrowings and ploughings are highly significant and interaction is significant.
   (iv) Av. yield of grain in lb./acre.

<table>
<thead>
<tr>
<th></th>
<th>H1</th>
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<th>H4</th>
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<tr>
<td>Mean</td>
<td>293</td>
<td>340</td>
<td>485</td>
<td>480</td>
<td>400</td>
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S.E. of marginal mean of H = 20.90 lb./acre.
S.E. of marginal mean of L = 14.80 lb./acre.
S.E. of body of table = 29.50 lb./acre.

Crop: Wheat (Rabi).

Object: To find the best preparatory tillage for Wheat crop.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Median black to deep black. (b) Refer soil analysis, Arnej. (iii) 24.10.1953. (iv) (a) As per treatments. (b) N.A. (c) 40 lb./acre. (d) 12" between rows. (e) N.A. (f) Nil. (vi) A—206 (medium). (vii) Unirrigated. (viii) Weeding. (ix) Rabi season, hence negligible. (x) 22.2.1954.

2. TREATMENTS:
   All combinations (1 and 2):
   (1) 3 levels of ploughing: L0=No ploughing and L1=One ploughing
   (2) 4 levels of harrowing: H1=2, H2=3, H3=4 and H4=5 harrowings.
   Date of ploughing—28.9.1950.

3. DESIGN:
   (i) 4×2 Fdct. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 113'×14'. (b) 109'×10'. (v) 2' all round net plot. (vi) Yes.

4. GENERAL:
   (i) Germination satisfactory and the stand of the crop fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1955. (b) No. (c) N.A. (x) (a) N.A. (b) N.A. (vi) The cloudy weather at the time of milky stage affected the grain size and maturity. (vii) Nil.

5. RESULTS:
   (f) 903 lb./acre.
   (ii) 97.60 lb./acre.
   (iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
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<td>895</td>
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</table>

S.E. of marginal means of H = 34.50 lb./ac.
S.E. of marginal means of L = 24.40 lb./ac.
S.E. of body of table = 48.90 lb./ac.

---

**Crop:** Wheat (Rabi).

**Site:** Agri. Res. Stn., Bhuwa.

**Ref:** Gj. 49(54).

**Type:** 'C'.

**Object:** To find out suitable spacing and sowing dates for Wheat.

1. **BASAL CONDITIONS:**
   (i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Black soils. (b) N.A. (iii) Normal sowing date 10.10.1949; other sowing dates—according to treatments. (iv) (a) Ploughing. (b) Drilling. (c) N.A. (d) Between rows—according to treatments; between plants irregular. (e) N.A. (v) Nil. (vi) Niphad-4. (vii) Unirrigated. (viii) One interculturing and one weeding. (ix) 0.46. (x) N.A.

2. **TREATMENTS:**
   **Main-plot treatments:**
   5 sowing dates:
   - D₁ = Two weeks before the normal sowing date (26.9.1949),
   - D₂ = One week before the normal sowing date (3.10.1949),
   - D₃ = Normal sowing date (10.10.1949)
   - D₄ = One week after the normal sowing date (17.10.1949),
   - D₅ = Two weeks after the normal sowing date (24.10.1949).

   **Sub-plot treatments:**
   2 spacings between rows: S₁ = 24' and S₂ = 27'.

3. **DESIGN:**
   (i) Split-plot. (ii) (a) 5 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 33' x 18'. (v) Two rows on either side and 3' of rows on either end. (vi) Yes.

4. **GENERAL:**
   (i) N.A. (ii) Heavy attack of stem borer. (iii) Grain yield. (iv) (a) 1949—1950. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. **RESULTS:**
   (i) 572 lb./ac.
   (ii) (a) 166.4 lb./ac.
   (b) 72.9 lb./ac.
   (iii) Main effect of D and interaction D x S are significant. Effect of S is not significant.
   (iv) Av. yield of grain in lb./ac.

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<tr>
<td>S₂</td>
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<td>533</td>
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<td>481</td>
<td>714</td>
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<tr>
<td>Mean</td>
<td>553</td>
<td>538</td>
<td>484</td>
<td>554</td>
<td>733</td>
<td>572</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. D marginal means = 67.9 lb./ac.
2. S marginal means = 18.8 lb./ac.
3. S means at the same level of D = 42.1 lb./ac.
4. D means at the same level of S = 74.1 lb./ac.
Crop: Wheat (Rabi).


Object: To find out suitable spacing and sowing dates for Wheat.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Lang and Gram. (c) Nil. (ii) (a) Black soil. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) Between rows-according to treatments; between plants-irregular.

2. TREATMENTS:

Main-plot treatments:
- 5 sowing dates:
  - D1 = Two weeks before normal sowing date (10.10.1950).
  - D2 = One week before normal sowing date (17.10.1950).
  - D3 = Normal sowing date (24.10.1950).
  - D4 = One week after the normal sowing date (31.10.1950).
  - D5 = Two weeks after the normal sowing date (7.11.1950).

Sub-plot treatments:
- 2 spacings between rows: S1 = 24" and S2 = 27".

3. DESIGN:

(i) Split-plot. (ii) 5 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 39' x 26', 39' x 27' for spacings 24' and 27' respectively. (b) 33' x 18'; v Two rows on either side and 3' of rows on either end. (vi) Yes.

4. GENERAL:

(i) The crop remained stunted for want of rains. The grains also remained spotted for want of sufficient moisture at the end. (ii) The mild attack, with very negligible damage, of ground hoppers and rats was experienced. (iii) Grain and chalk yield. (iv) 1949-1950. (b) No. (c) N.A. (v) and (b) N.A. (vi) and (vii) S.d.

5. RESULTS:

(i) 410 lb./ac.
(ii) (a) 75.76 lb./ac.
(b) 43.38 lb./ac.
(iii) Mean of D alone is highly significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>D5</th>
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<tr>
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<td>292</td>
<td>445</td>
<td>476</td>
<td>425</td>
<td>410</td>
</tr>
</tbody>
</table>

S.E. of difference of two:
1. D marginal means = 23.37 lb./ac.
2. S marginal means = 11.8 lb./ac.
3. S means at the same level of D = 23.4 lb./ac.
4. D means at the same level of S = 29.3 lb./ac.
2. TREATMENTS:

Main-plot treatments:
3 spacings between rows: $S_1 = 18''$, $S_2 = 24''$ and $S_3 = 27''$.

Sub-plot treatments:
3 seed rates: $R_1 = 30$, $R_2 = 40$ and $R_3 = 50$ lb./ac.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 36'' x 21''. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Due to lack of moisture in soil and also due to grass hoppers, the growth was checked. (ii) Grass hoppers caused a little damage. Gammaxene was applied. (iii) Grain and fodder yield. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 53 lb./ac.
(ii) (a) 20.63 lb./ac.
(b) 18.09 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>Mean</td>
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<td>56</td>
<td>48</td>
<td>53</td>
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</table>

S.E. of difference of two
1. S marginal means = 6.87 lb./ac.
2. R marginal means = 6.02 lb./ac.
3. R means at the same level of S = 10.44 lb./ac.
4. S means at the same level of R = 10.95 lb./ac.

Crop: Wheat. (Rabi).
Object: To find out suitable spacing and seed rate for Wheat crop.

1. BASAL CONDITIONS:

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 28.10.1953. (iv) (a) 6 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 15 C.L./ac. of F.Y.M. on 30.5.1953 by broadcasting. (vi) Kenphad (medium). (vii) Nil. (viii) Nil. (ix) 0.10''. (x) 4.3.1954.

2. TREATMENTS:

Main-plot treatments:
3 spacings between rows: $S_1 = 18''$, $S_2 = 24''$ and $S_3 = 27''$.

Sub-plot treatments:
3 seed rates: $R_1 = 30$, $R_2 = 40$ and $R_3 = 50$ lb./ac.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) $39'' x 27'', 40'' x 27''$ and $40.5'' x 27''$ for 18'', 24'' and 27'' spacings respectively. (b) $36'' x 21''$. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Crop growth was unsatisfactory due to insufficient moisture. (ii) Mild attack of grass hoppers. No control measures were taken. (iii) Grain yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Yield very low. This may be treated as vitiated.

Ref: Gj. 53(1£2).
Type: ‘C’.
5. RESULTS:

(i) 94.15 Jb.fac.
(ii) (a) 32.89 lb./ac.
(b) 21.13 lb./ac.
(iii) Only sub-plot treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

<table>
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<td>99.6</td>
<td>101.9</td>
<td>91.8</td>
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<td>R3</td>
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<td>109.7</td>
<td>121.6</td>
<td>119.7</td>
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<tr>
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<td>92.5</td>
<td>100.7</td>
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S.E. of difference of two
1. S marginal means = 10.96 lb./ac.
2. R marginal means = 7.14 lb./ac.
3. R means at the same level of S = 12.37 lb./ac.
4. S means at the same level of R = 14.91 lb./ac.

Crop: Wheat. (Rabi).
Object: To find out suitable sowing dates for Wheat.

1. BASAL CONDITIONS:
(i) (a) Nil. (b) Maize. (c) 10 C.L./ac. of F.Y.M.
(ii) (a) Dark brown. (b) Refer soil analysis, Dohad.
(iii) As per treatments.
(iv) (a) 4 ploughings. (b) and (c) N.A.; id. As per treatments.
(e) N.A. (v) N.A.
(vi) Niphad-1 (medium). (vii) Irrigate. (viii) 2 weedings. (ix) Nil. (x) 3.3.4949.

5. RESULTS:

<table>
<thead>
<tr>
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<tr>
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<td>1130</td>
<td>1096</td>
<td>1074</td>
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<tr>
<td>Mean</td>
<td>1045</td>
<td>1124</td>
<td>1100</td>
<td>1024</td>
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</table>

S.E. of difference of two
1. D marginal means = 66.6 lb./ac.
2. S marginal means = 70.3 lb./ac.
3. S means at the same level of D = 157.4 lb./ac.
4. D means at the same level of S = 129.6 lb./ac.
Crop: Wheat (Rabi).


Object: To find out suitable spacings and sowing dates for Wheat.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) Maize. (c) 10 C.L./ac. of P.Y.M. (ii) (a) Black soil. (b) Refer soil analysis, Dohad.
   (iii) As per treatments (iv) (a) 4 ploughings. (b) N.A. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) Niphad-4. (vii) Irrigated. (viii) One weeding. (ix) Nil. (x) 10.3.1950.

2. TREATMENTS:
   Main-plot treatments:
   Sub-plot treatments:
   2 spacings between rows: S1 = 15\" and S2 = 18\".

3. DESIGN:
   (i) Split-plot. (ii) (a) 5 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iii) 6 (iv) (a) 39\" X 20\" for 15\" spacing; 39\" X 21\" for 18\" spacing. (b) 33\" X 15\". (v) Two rows on either side and 3 \ of rows on either end. (vi) Yes.

4. GENERAL:
   (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948-1950. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 1066 lb./ac.
   (ii) (a) 156.9 lb./ac.
   (b) 121.8 lb./ac.
   (iii) Only D effect is significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
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<td>1073</td>
<td>1201</td>
<td>998</td>
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<td>Mean</td>
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<td>1006</td>
<td>1042</td>
<td>1186</td>
<td>990</td>
<td>1066</td>
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S.E. of difference of two:
1. D marginal means = 64.1 lb./ac.
2. S marginal means = 31.5 lb./ac.
3. S means at the same level of D = 70.4 lb./ac.
4. D means at the same level of S = 81.1 lb./ac.

Crop: Wheat (Rabi).


Object: To find out suitable spacings and sowing dates for Wheat.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) Green manuring crop. (c) N.A. (ii) (a) Dark brown. (b) Refer soil analysis, Dohad.
   (iii) As per treatments. (iv) (a) N.A. (b) Drilled. (c) 60 lb./ac. (d) As per treatments. (e) N.A. (v) N.A. (vi) Niphad-4. (vii) Irrigated. (viii) Only hand weeding for a number of days to remove weeds. (ix) Rabi season, hence negligible. (x) 9.4.1951.

2. TREATMENTS:
   Main-plot treatments:
   Sub-plot treatments:
   2 spacings (rows X plants): S1 = 15\" X 4\" and S2 = 18\" X 4\".
3. DESIGN:
   (i) Split-plot. (ii) (a) 5 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iii) 6 (iv) (a) 30' × 20' for
   15' spacing; 30' × 21' for 18' spacing. (v) Two rows on either side and 3' of rows on either
   end. (vi) Yes.

4. GENERAL:
   (i) Germination and the general growth of the crop was satisfactory. Hot season started earlier due to which
   the maturity of the crop was hastened. (ii) Slight attack of stem borer, but damage was negligible. (iii)
   Grain yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 875 lb./ac.  
   (ii) (a) 222.2 lb./ac.  (b) 116.6 lb./ac.  
   (iii) None of the effects is significant.  
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>D5</th>
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<td>967</td>
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<td>952</td>
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<td>920</td>
<td>945</td>
<td>747</td>
<td>844</td>
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<tr>
<td>Mean</td>
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<td>795</td>
<td>943</td>
<td>948</td>
<td>849</td>
<td>875</td>
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</tbody>
</table>

S.E. of difference of two
1. D marginal means = 90.7 lb./ac.  
2. S marginal means = 30.1 lb./ac.  
3. S means at the same level of D = 67.3 lb./ac.  
4. D means at the same level of S = 102.5 lb./ac.

Crops: Wheat (Rabi).
Object: To ascertain the optimum seed rate for Wheat.

1. BASAL CONDITIONS:
   (i) (a) Bajra—Wheat. (b) and (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) 27.11.1949. (iv) (a)
   to (c) N.A. (v) 80 lb./bigha of manure mixture top dressed on 18.12.1949. (vi) J.P.—52 (medium).
   (vii) Irrigated. (viii) N.A. (ix) Rabi season, hence negligible. (x) N.A.

2. TREATMENTS:
   3 seed rates: R1 = 38, R2 = 59 and R3 = 80 lb./bigha.

3. DESIGN:
   (i) R.B.D. (ii) (a) 3. (b) N.A. (ii) 6. (iv) (a) and (b) 51' × 26'. (v) Nil. (vi) Yes.

4. GENERAL:
   (i) Not good. (ii) Mild attack of white ants. (iii) Grain yield (iv) (a) 1948—N.A. (b) and (c) Nil. (v)
   (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 475 lb./ac.  
   (ii) 108.5 lb./ac.  
   (iii) Treatments differ highly significantly.  
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
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<tbody>
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<tr>
<td>R2</td>
<td>459</td>
</tr>
<tr>
<td>R3</td>
<td>657</td>
</tr>
</tbody>
</table>

S.E./mean = 44.3 lb./ac.
Crop: - Wheat (Rabi).

Object: - To ascertern the optimum seed rate for Wheat.

1. BASAL CONDITIONS:
(i) (a) Bajra-Wheat. (b) and (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) 16.11.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) J.P.-52 (medium). (vii) Irrigated. (viii) N.A. (ix) Rabi season, hence negligible. (x) 15.3.1952.

2. TREATMENTS:
6 seed rates: \( R_1 = 40, R_2 = 60, R_3 = 80, R_4 = 100, R_5 = 120 \) and \( R_6 = 136 \) lb./ac.

3. DESIGN:
(i) R.B.D. (ii) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 40' x 12'. (v) Nil. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 751 lb./ac.
(ii) 63.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
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<th>Av. yield</th>
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<tr>
<td>( R_6 )</td>
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<tr>
<td>S.E./mean</td>
<td>31.8 lb./ac.</td>
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</table>

Crop: - Wheat (Rabi).

Object: - To ascertain the optimum seed rate for Wheat.

1. BASAL CONDITIONS:

2. TREATMENTS:
6 seed rates: \( R_1 = 40, R_2 = 60, R_3 = 80, R_4 = 100, R_5 = 120 \) and \( R_6 = 136 \) lb./ac.

3. DESIGN:
(i) R.B.D. (ii) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 40' x 12'. (v) Nil. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 751 lb./ac.
(ii) 108.2 lb./ac.
(iii) Treatments differ highly significantly.
Crop - Wheat (Rabi).

Object: To find optimum spacing and economic seed rate for two varieties of Wheat.

1. BASAL CONDITIONS:
   (i) (a) No Wheat: (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej.
   (iii) 25.10.1970. (iv) (a) 5 harrowings. (b) Drilled with 2 coultered reel drill. (c) and (d) As per treatments.
   (e) N.A. (v) N.A. (vi) As per treatments (v) Unirrigated. (vii) Weeding (iv) Rabi season, hence negligible.

2. TREATMENTS:
   Main-plot treatments:
   All combinations of (1) and (2)
   (1) 2 varieties: V1 = A-206 and V2 = A-624
   (2) 3 spacings: S1 = 12", S2 = 15" and S3 = 18"
   Sub-plot treatments:
   4 seed rates: R1 = 30, R2 = 40, R3 = 50 and R4 = 60 lb./ac.

3. DESIGN:
   (i) Split-plot. (ii) (a) 6 main-plots/block; 4 sub-plots/main-plt. (b) 10" x 15".
   (iii) 5. (iv) (a) 40 x 15", 40 x 20" and 40 x 21" for 12", 15" and 18" spacings respectively. (b) 10" x 15".
   (v) Two rows on either side and 2 on both ends of rows of the net plot. (vi) Yes.

4. GENERAL:

5. RESULTS:
   (i) 686 lb./ac.
   (ii) (a) 91.35 lb./ac.
   (b) 75.02 lb./ac.
   (iii) Only V effect is highly significant. Others are not significant.
   (iv) Av. yield of grain in lb./ac.

<table>
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<th></th>
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<th>S2</th>
<th>S3</th>
<th>Mean</th>
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S.E. of difference of two:
1. V marginal means = 18.68 lb./ac.
2. S marginal means = 21.88 lb./ac.
3. R marginal means = 21.63 lb./ac.
4. R means at the same level of V = 30.6 lb./ac.
5. V means at the same level of R = 12.42 lb./ac.
6. R means at the same level of S = 37.5 lb./ac.
7. S means at the same level of R = 39.70 lb./ac.
8. means in the body of V x S table = 12.37 lb./ac.
Crop: Wheat (Rabi).


Object: To find out optimum spacing and economic seed rate for two varieties of Wheat.

1. BASAL CONDITIONS:
   (i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej.
   (iii) 0.10.1951. (iv) (a) Harrowing 5 times. (b) Drilled with 2 coulted drill. (c) and (d) As per treatments.
   (x) 16.2.1952.

2. TREATMENTS:
   Main-plot treatments:
   All combinations of (1) and (2)
   (1) 2 varieties: V1 = A·206 and V2 = A·624.
   (2) 3 spacings: S1 = 12", S2 = 15" and S3 = 18".
   Sub-plot treatments:
   4 seed rates: R1 = 30, R2 = 40, R3 = 50 and R4 = 60 lb./ac.

3. DESIGN:
   (i) Split-plot. (ii) (a) 6 main-plots/block; 4 sub-plots/main-plot. (b) 180' x 120'. (iii) 4.
   (iv) (a) 40' x 15', 40' x 20' and 40' x 21' for 12", 15" and 18" spacings respectively. (b) 36' x 15'. (v) Two rows on either side and 2' on both ends of row. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1951. (b) No. (c) N.A. (v) (a) No. (b) N.A.
   (vi) and (vii) Nil.

5. RESULTS:
   (i) 287 lb./ac.
   (ii) (a) 53.3 lb./ac.
   (b) 41.9 lb./ac.
   (iii) None of the effects is significant.
   (iv) Av. yield of grain in lb./ac.

<table>
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<td>V2</td>
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<tr>
<td>R1</td>
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<td>267</td>
<td>268</td>
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</tr>
<tr>
<td>R2</td>
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<td>R3</td>
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<td>270</td>
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<td>295</td>
<td>289</td>
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S.E. of difference of two
1. V marginal means = 11.28 lb./ac.
2. S marginal means = 13.82 lb./ac.
3. R marginal means = 12.09 lb./ac.
4. R means at the same level of V = 17.12 lb./ac.
5. V means at the same level of R = 18.64 lb./ac.
6. R means at the same level of S = 20.95 lb./ac.
7. S means at the same level of R = 22.82 lb./ac.
8. Means in the body of V x S table = 19.54 lb./ac.
Crop: *Wheat* (*Rabi*).

Object: To ascertain the optimum level and interval of irrigation for Wheat.

1. **BASAL CONDITIONS**:
   (i) (a) *Bajra*—Wheat. (b) *Bajra*. (c) 5 C.L./bigha of F.Y.M. (ii) (a) Light: sandy soil. (b) N.A. (iii) 9.11.1948. (iv) (a) to (c) N.A. (v) 150 lb./bigha of Castor cakes at the time of sowing. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) 16.3.1949.

2. **TREATMENTS**:
   All combinations of (1) and (2)
   (1) 3 levels of irrigation: $I_1 = 30,000$, $I_2 = 35,000$ and $I_3 = 40,000$ gallons/bigha.
   (2) 3 intervals of irrigation: $T_1 =$ Once in 8 days, $T_2 =$ Once in 10 days and $T_3 =$ Once in 12 days.

3. **DESIGN**:
   (i) $3 \times 3$ Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) a) and (b) $J^1 \times 1^1$. (v) Nil. (vi) Yes.

4. **GENERAL**:
   (i) Good. (ii) White-ant attack observed. (iii) Grain yield. (iv) (a) 1945—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. **RESULTS**:
   (i) 604 lb./ac. (ii) 145.0 lb./ac.
   (iii) None of the effects is significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
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<td>$I_2$</td>
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<td>622</td>
<td>607</td>
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<td>$I_3$</td>
<td>642</td>
<td>547</td>
<td>517</td>
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<tr>
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<td>644</td>
<td>612</td>
<td>557</td>
<td>604</td>
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</table>

S.E. of any marginal mean = 37.45 lb./ac.
S.E. of body of table = 4.13 lb./ac.

Crop: *Wheat* (*Rabi*).  

Object: To ascertain the optimum level and interval of irrigation for Wheat.

1. **BASAL CONDITIONS**:
   (i) (a) *Bajra*-Wheat. (b) *Bajra*. (c) N.A. (ii) (a) Light: sandy soil. (b) N.A. (iii) 20.11.1942. (iv) (a) to (e) N.A. (v) 83 lb./bigha of manure mixture, top dressed on 8.12.1942. (vi) C = 13 (medium). (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) N.A.

2. **TREATMENTS**:
   All combinations of (1) and (2)
   (1) 3 levels of irrigation: $I_1 = 51,000$, $I_2 = 59,500$ and $I_3 = 65,000$ gallons/bigha.
   (2) 3 intervals of irrigation: $T_1 =$ Once in 8 days, $T_2 =$ Once in 10 days and $T_3 =$ Once in 12 days.

3. **DESIGN**:
   (i) $3 \times 3$ Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) a) and (b) $J^1 \times 1^1$. (v) Nil. (vi) Yes.

4. **GENERAL**:
   (i) Good. (ii) White-ant attack observed. (iii) Grain yield. (iv) (a) 1945—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.
5. RESULTS:
(i) 723 lb./ac.
(ii) 149.2 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
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<tr>
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<th>$T_2$</th>
<th>$T_3$</th>
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<td>766</td>
<td>783</td>
<td>763</td>
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<td>$I_3$</td>
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<td>751</td>
<td>745</td>
<td>674</td>
<td>729</td>
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S.E. of any marginal mean = 38.5 lb./ac.
S.E. of body of table = 66.7 lb./ac.

Crop: Wheat (Rabi).
Ref: Gj. 51(227).
Type: 'I'.

Object: To ascertain the optimum level and interval of irrigation for Wheat.

1. BASAL CONDITIONS:
(i) (a) Bajra—Wheat. (b) Bajra. (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) 9.11.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) J.P.—52 (medium). (vii) Irrigated. (viii) N.A. (ix) Rabi season, hence negligible. (x) 21.3.1952.

2. TREATMENTS:
All combinations of (1) and (2)
(1) 3 levels of irrigation: $I_1 = 51,000$, $I_2 = 57,500$ and $I_3 = 68,000$ gallons/ac.
(2) 3 intervals of irrigation: $T_1$ = once in 8 days, $T_2$ = once in 10 days and $T_3$ = once in 12 days.

3. DESIGN:
(i) $3 \times 3$ Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) $9' \times 40'$. (b) $7' \times 38'$. (v) $1'$ around. (vi) Yes.

4. GENERAL:
(i) Very good. (ii) Nil. (iii) Grain yield. (iv) (a) 1945—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 2115 lb./ac.
(ii) 240.7 lb./ac.
(iii) Only main effect of interval of irrigation is highly significant. Others are not significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>$T_1$</th>
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<td>2292</td>
<td>1719</td>
<td>2169</td>
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<td>$I_3$</td>
<td>2210</td>
<td>2128</td>
<td>1883</td>
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<td>2306</td>
<td>2251</td>
<td>1787</td>
<td>2115</td>
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S.E. of any marginal mean = 69.5 lb./ac.
S.E. of body of table = 120.4 lb./ac.
Crop: Wheat (Rahi).

Object: To ascertain the optimum level and interval of irrigation for Wheat.

1. BASAL CONDITIONS:

2. TREATMENTS
   All combinations of (1) and (2)
   (1) 3 levels of irrigation: \( I_1 = 51,000 \), \( I_2 = 57,800 \) and \( I_3 = 63,000 \) gallons/ac.
   (2) 3 intervals of irrigation: \( T_1 = \text{once in 8 days}, T_2 = \text{once in 10 days} \) and \( T_3 = \text{once in 12 days} \)

3. DESIGN:
   (i) 3 \( \times \) 3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 10' \times 12'. (b) 24' \times 10'. (c) 3' \times 1'. (vi) Yes.

4. GENERAL:
   (i) Very good. (ii) Nil. (iii) Grain yield. (iv) (a) 15-25—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS
   (i) 151 lb/ac.
   (ii) 225 lb/ac.
   (iii) Only main effect of interval of irrigation is significant.
   (iv) Av. yield of grain in lb/ac.

<table>
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<tr>
<th></th>
<th>( T_1 )</th>
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<td>1484</td>
<td>1533</td>
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<tr>
<td>( I_2 )</td>
<td>1605</td>
<td>1576</td>
<td>1511</td>
<td>1504</td>
</tr>
<tr>
<td>( I_3 )</td>
<td>1661</td>
<td>1461</td>
<td>1216</td>
<td>1446</td>
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<tr>
<td>Mean</td>
<td>1658</td>
<td>1480</td>
<td>1305</td>
<td>1514</td>
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S.E. of marginal means = 65.0 lb/ac.
S.E. of body of table = 112.6 lb/ac.

Crop: Wheat (Rahi).

Object: To study the effect of hormone on the yield of Wheat.

1. BASAL CONDITIONS:
   (i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 26.10.1953. (iv) (a) 4 harrowings. (b) to (e) N.A. (v) Nil. (vi) A-206 medium. (vii) Unirrigated. (viii) Weeding. (ix) Rohi season hence negligible. (x) 22.2.1954.

2. TREATMENTS
   All combinations of (1) and (2)+a control (untreated dry seed)
   (1) 3 concentrations of 2-4-D in p.p.m.: \( C_1 = 0.01 \), \( C_2 = 0.10 \) and \( C_3 = 1.00 \) p.p.m.
   (2) 2 intervals for which the seeds were soaked in the above solution: \( T_1 = 30 \) minutes and \( T_2 = 20 \) hours.

3. DESIGN:
   (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 36' x 18'. (b) 30' x 12'. (v) 3' all round net plot. (vi) Yes.
4. GENERAL:
(i) Germination was satisfactory and the stand was good. (ii) Nil. (iii) Nil. (iv) (a) 1953—1915. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) The cloudy weather at the time of milky stage, affected the grain size and maturity. Emergence of seeds treated for 20 hours was earlier by a day. (vii) Nil.

5. RESULTS:
(i) 712 lb./ac
(ii) 51.67 lb. /ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
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<td>737</td>
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S.E. of marginal mean of C = 18.27 lb./ac.
S.E. of marginal mean of T = 14.92 lb./ac.
S.E. of body of table = 25.88 lb./ac.

Crop := Jowar (Kharif).

Ref := Gj. 50(78).
Type := 'M'.

Object := To study the N and P₂O₅ requirements of Jowar (without basal manuring of F.Y.M).

1. BASAL CONDITIONS:

2. TREATMENTS:
All combinations of (1) and (2)
(1) 4 levels of N : N₀ = 0, N₁ = 15, N₂ = 30 and N₃ = 45 lb./ac.
(2) 4 levels of P₂O₅ : P₀ = 0, P₁ = 15, P₂ = 30 and P₃ = 45 lb./ac.
N as G.N.C. and P₂O₅ as super. Manures applied at sowing by spacing.

3. DESIGN:
(i) 4 x 4 Test. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 42' x 24'. (b) 30' x 12'. (v) 6' around. (vi) Yes.

4. GENERAL:
(i) Withering was seen during the draught period. Grain setting was poor in some plots. (ii) Plants were severely attacked by stem borer and swampy caterpillar. These troubles were in patches only. (iii) Grain and fodder yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) Surat. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 833 lb./ac.
(ii) 142.6 lb./ac.
(iii) Only main effect of N is significant.
(iv) Av. yield of grain in lb./ac.

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<td>855</td>
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<td>Mean</td>
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<td>846</td>
<td>887</td>
<td>833</td>
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S.E. of any marginal mean = 31.7 lb./ac.
S.E. of body of table = 71.3 lb./ac.

Crop: Jowar (Kharif).
Object: To study the N and P₂O₅ requirements of Jowar (without basal manuring of F.Y.M.).

1. BASAL CONDITIONS:
   (i) a) Cotton-Jowar-Groundnut. (b) N.A. (c) N.A. (d) Medium black. (e) Refer soil analysis, Amreli. (iii) 27,6.1952. (iv) (a) to (e) N.A. (v) N₁. (vi) N.A. (vii) Unirrigated. (viii) One interculturing, one thinning and one weeding. (iv) 12.72. (x) 24 to 27.10.1952.

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 4 levels of N: N₀ = 0, N₁ = 15, N₂ = 30 and N₃ = 45 lb./ac.
   (2) 4 levels of P₂O₅: P₀ = 0, P₁ = 15, P₂ = 30 and P₃ = 45 lb./ac.

N as G.N.C. and P₂O₅ as Super.

3. DESIGN:
   (i) 4x4 Fact. in R.B.D. (ii) A.B. (iii) 16. (iv) 19.5'x35'. (v) 13.5'x29'. (vi) 3' around. (vii) Yes.

4. GENERAL:
   (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1953-1952. (b) N₀ (c) N₁. (v) (a) Surat. (b) N.A. (vi) Yields are very poor due to insufficient rains. (vii) The exp. was situated in 1951.

5. RESULTS:
   (i) 20 lb./ac.
   (ii) 134 3 lb./ac.
   (iii) None of the effects is significant.
   (iv) Av. yield of grain in lb./ac.

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<th>N₂</th>
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<td>204</td>
<td>244</td>
<td>217</td>
<td>209</td>
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</table>

S.E. of any marginal mean = 33.6 lb./ac.
S.E. of body of table = 67.2 lb./ac.
Crop :- Jowar (Kharij).
Ref :- Gj. 50(77).
Type :- 'M'.

Object :- To study the N and P\(_2\)O\(_5\) requirements of Jowar (with basal manuring of F.Y.M.).

1. BASAL CONDITIONS:

(i) (a) Cotton-Jowar-Groundnut. (b) Cotton. (c) 7 C.L./ac. of F.Y.M. and 280 lb./ac. of G.N.C. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 17.7.1950. (iv) (a) N.A. (b) Drilling. (c) 14 lb./ac. (d) Between rows 18". (e) N.A. (v) 5 C.L./ac. of F.Y.M. was spread on 18.5.1950. (vi) Local (early). (vii) Unirrigated. (viii) Weeding on 8.8.1950; interculturing on 1.8.1950 to 7.8.1950. (ix) 21.90". (x) 27.10.1950.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 4 levels of N : N\(_0\) = 0, N\(_1\) = 15, N\(_2\) = 30 and N\(_3\) = 45 lb./ac.
(2) 4 levels of P\(_2\)O\(_5\) : P\(_0\) = 0, P\(_1\) = 15, P\(_2\) = 30 and P\(_3\) = 45 lb./ac.
N as G.N.C. and P\(_2\)O\(_5\) as Super. Manures applied at the time of sowing by spreading.

3. DESIGN:

(i) 4 x 4 Fict. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 42' x 24'. (b) 30' x 12'. (v) 6 all round the net plot. (vi) Yes.

4. GENERAL:

(i) Withering of crop was seen during the draught period. Grain setting was poor in some plots. (ii) Plants were severely attacked by stem borers and swarmy caterpillar. These troubles were in patches only. (iii) Grain and fodder yield (iv) (a) 1950-1952. (b) No. (c) N.A. (v) (a) Surat. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 493 lb./ac.
(ii) 207.2 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>P(_0)</th>
<th>P(_1)</th>
<th>P(_2)</th>
<th>P(_3)</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>503</td>
<td>442</td>
<td>492</td>
<td>466</td>
<td>476</td>
</tr>
<tr>
<td>745</td>
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<td>405</td>
<td>378</td>
<td>491</td>
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<td>416</td>
<td>548</td>
<td>541</td>
<td>579</td>
<td>521</td>
</tr>
<tr>
<td>446</td>
<td>412</td>
<td>548</td>
<td>533</td>
<td>485</td>
</tr>
</tbody>
</table>

Mean

527  459  496  489  493

S.E. of any marginal mean = 51.8 lb./ac.
S.E. of body of table = 103.6 lb./ac.

Crop :- Jowar (Kharij).
Ref :- Gj. 52(238).
Type :- 'M'.

Object :- To study the N and P\(_2\)O\(_5\) requirements of Jowar (with basal manuring of F.Y.M.).

1. BASAL CONDITIONS:

(i) (a) Cotton-Jowar-Groundnut. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 27.6.1952. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 18" between rows. (e) — (f) 5 C.L./ac. of F.Y.M. (v) N.A. (vi) Irrigated. (vii) One interculturing, one weeding and two thinning. (ix) 12.72". (x) N.A.
2. TREATMENTS:

All combinations of (1) and (2)

(1) 4 levels of $N$: $N_0 = 0$, $N_1 = 15$, $N_2 = 30$ and $N_3 = 45$.
(2) 4 levels of $P_2O_5$: $P_0 = 0$, $P_1 = 15$, $P_2 = 30$ and $P_3 = 45$ lb./ac.

$N$ as G.N.C. and $P_2O_5$ as Super.

3. DESIGN:

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 19.5' x 35'. (b) 13.5' x 29'. (v) 3' around. (vi) Yes.

4. GENERAL:

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) No. (c) Nil. (v) (a) Surat. (b) N.A. (vi) The rains in the 3rd week of August, 1952 were insufficient. Irrigations were given but they were given late and as such yields were very poor. (vii) The experiment was vitiatated in 1951.

5. RESULTS:

(i) 386 lb./ac.
(ii) 229.4 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>$N_0$</th>
<th>$N_1$</th>
<th>$N_2$</th>
<th>$N_3$</th>
<th>Mean</th>
</tr>
</thead>
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<td>$P_0$</td>
<td>387</td>
<td>356</td>
<td>442</td>
<td>446</td>
<td>408</td>
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<tr>
<td>$P_1$</td>
<td>314</td>
<td>385</td>
<td>410</td>
<td>361</td>
<td>367</td>
</tr>
<tr>
<td>$P_2$</td>
<td>599</td>
<td>420</td>
<td>397</td>
<td>475</td>
<td>451</td>
</tr>
<tr>
<td>$P_3$</td>
<td>468</td>
<td>189</td>
<td>271</td>
<td>345</td>
<td>318</td>
</tr>
</tbody>
</table>

Mean 412 338 358 407 386

S.E. of any marginal mean $= 57.4$ lb./ac.
S.E. of body of table $= 114.7$ lb./ac.

Crop: Jowar (Rabi).

Ref.: Gj. 53(258).
Type: 'M'.

Object: To study the usefulness of burying tender leaves of Sann on succeeding Jowar.

1. BASAL CONDITIONS:

(i) (a) No. (b) Sann. (c) Nil. (ii) (a) Medium black soil. (b) N.A. (ii) 29.9.1953. (iv) (a) 6 Harrowings (b) Drilling. (c) 6 lb./ac. (d) Between rows 24". (e) N.A. (v) Nil. (vi) Jowar No. 8. (vii) Unirrigated. (viii) Thinning on 16.10.1953; Interculturing on 20.10.1953. (ix) Negligible because of Rabi season. (x) 28.1.1954.

2. TREATMENTS:

1. Sann grown for green manuring and buried in situ.
2. Sann grown for green manuring and was cut for burying in treatment (3).
3. Buried stripped leaves and tender tops from treatment (2).
4. No green manuring.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 93.75' x 12' (b) 14.75' x 12'. (v) 3' along length. (vi) Yes.

4. GENERAL:

(i) Crop growth was vigorous. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1953-1954. (b) N.A. (c) N.A. (v) a. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:

(i) 1334 lb./ac.
(ii) 146.7 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1322</td>
</tr>
<tr>
<td>2.</td>
<td>1167</td>
</tr>
<tr>
<td>3.</td>
<td>1503</td>
</tr>
<tr>
<td>4.</td>
<td>1344</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=103.7 lb./ac.</td>
</tr>
</tbody>
</table>

Crop :- Jowar (Rabi).
Ref :- Gj. 53(257).
Type :- 'M'.

Object :- To study the usefulness of chinamug as a green manure on succeeding Rabi Jowar (Feeler trial).

1. BASAL CONDITIONS:
   (i) (a) No. (b) Jowar. (c) Nil. (ii) (a) Medium black cotton soil. (b) N.A. (iii) 22.9.1953. (iv) (a) 6 harrowings. (b) Drilling. (c) 6 lb./ac. (d) Between rows—24' and between plants—irregular. (e) N.A. (f) Nil. (g) Jowar No. 8. (h) Medium. (i) Unirrigated. (j) Thinning on 10.10.1953 and interculturating on 20.10.1953. (k) Rabi season, hence negligible. (l) 28.1.1954.

2. TREATMENTS:
   2. Chinamug grown in Kharif, cut and buried in plot receiving treatment (3).
   3. No chinamug grown in Kharif but G.M. from treatment (2) buried.

3. DESIGN:
   (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) (a) 90.75'x12'. (b) 84.75'x12'. (v) 3' along length. (vi) Yes.

4. GENERAL:
   (i) Crop growth was vigorous. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1953—1955. (b) No. (c) N.A. (d) (a) and (b) N.A. (e) and (f) Nil.

5. RESULTS:
   (i) 1346 lb./ac.
   (ii) 41.76 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1276</td>
</tr>
<tr>
<td>2.</td>
<td>1160</td>
</tr>
<tr>
<td>3.</td>
<td>1301</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=29.53 lb./ac.</td>
</tr>
</tbody>
</table>

Objective :- To study the effect of leguminous crop (Chinamug) grown with and without Super on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) Chinamug—Jowar. (b) Chinamug. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 6.9.1949. (iv) (a) N.A. (b) Drilling. (c) 6 lb./ac. (d) Between rows—24' and between plants—irregular. (e) N.A. (f) Nil. (g) Jowar No. 8. (h) Medium. (i) Unirrigated. (j) Thinning on 18.10.1949 and interculturating on 18 and 29.10.1949. (k) Negligible. (l) 21 to 27.2.1950.

2. TREATMENTS:
   1. Control (No P₂O₅).
   2. 50 lb./ac. of P₂O₅ as Super applied to previous crop Chinamug.
   3. 100 lb./ac. of P₂O₅ as Super applied to pre-cous crop Chinamug.
   4. 150 lb./ac. of P₂O₅ as Super applied to previous crop Chinamug.
   5. Fallow in Kharif but Sann in Rabi with manuring 10 C.L./ac. of F.Y.M.
3. DESIGN:
   (i) R.B.D. (ii) 5. (b) N.A. (iii) 5. (iv) 5' x 34'. (v) 47' x 30'. (vi) 2' all round the net plot. (vii) Yes.

4. GENERAL:
   (i) Normal (ii) Nil. (iii) Grain yield. (iv) (a) Kharif 1948-49 to Rabi 1954-55. (b) Nil. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 756 lb./ac. (ii) 113.8 lb./ac. (iii) Treatments do not differ significantly. (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>754</td>
</tr>
<tr>
<td>2.</td>
<td>603</td>
</tr>
<tr>
<td>3.</td>
<td>818</td>
</tr>
<tr>
<td>4.</td>
<td>779</td>
</tr>
<tr>
<td>5.</td>
<td>618</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>39.99 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Jowar (Rabi).
Object: To study the effect of leguminous crop (Chinamug) grown with and without P₂O₅ on the succeeding cereal crop Jowar.

Ref: Gj. 53(64).
Type: M'.
Crop: Jowar (Raśi).


Object: To study the effect of Lang (legume) grown with and without P₂O₅ on the succeeding Jowar.

1. BASAL CONDITIONS:
   (i) (a) Lang—Jowar. (b) Lang. (c) As per treatments. (ii) (a) Black cotton soil. (b) N.A. (iii) 22.9.1953.
   (iv) (a) 6 harrowings. (b) Drilling. (c) 8 lb./ac. (d) 24". (e) N.A. (v) Nil. (vi) Jowar No. 8 (medium).

2. TREATMENTS:
   1. Control (no P₂O₅).
   2. 50 lb./ac. of P₂O₅ as Super applied to Lang.
   3. 100 lb./ac. of P₂O₅ as Super applied to Lang.
   4. 150 lb./ac. of P₂O₅ as Super applied to Lang.
   5. Fallow in Kharif and sown in Rabi.

3. DESIGN:
   (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 48'×24'. (b) 44'×20'. (v) 2' all round the net plot.
   (vi) Yes.

4. GENERAL:
   (i) Normal. (ii) Mild attack of grass hoppers. (iii) Grain yield. (iv) (a) 1952–1954. (b) No. (c) N.A.
   (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 814 lb./ac.
   (ii) 322.7 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>810</td>
</tr>
<tr>
<td>2.</td>
<td>721</td>
</tr>
<tr>
<td>3.</td>
<td>981</td>
</tr>
<tr>
<td>4.</td>
<td>809</td>
</tr>
<tr>
<td>5.</td>
<td>749</td>
</tr>
<tr>
<td>E.t.mean</td>
<td>= 144.5 lb./ac</td>
</tr>
</tbody>
</table>

Crop: Jowar. (Kharif).


Object: To determine the optimum dose of Gypsum for Jowar.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) No. (c) 4 C.L./ac. of F.Y.M. (ii) (a) Saline soil. (b) N.A. (iii) 3.7.1953. (iv) (a)
   2 harrowings and 2 ploughings. (b) to (e) N.A. (v) Nil. (vi) Saundia fodder variety. (vii) Unirrigated.
   (viii) Nil. (ix) 25.70'. (x) 13.10.1953,

2. TREATMENTS:
   1. Control (no gypsum).
   2. 0.5 ton/ac. of gypsum applied on 15.5.1953.
   3. 1.0 ton/ac. of gypsum applied on 15.5.1953.

3. DESIGN:
   (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 16.5'×16.5'. (v) Nil. (vi) Yes.

4. GENERAL:
   (i) Not good. (ii) Nil. (iii) Fodder and grain yield. (iv) (a) 1951—Contd (b) No. (c) N.A. (v) (a)
   and (b) N.A. (vi) and (vii) Nil.
### 5. RESULTS:

#### Forage

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield lb/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>2</td>
<td>428</td>
</tr>
<tr>
<td>3</td>
<td>400</td>
</tr>
</tbody>
</table>

S.E./mean = 70.6 lb/ac.

#### Grain

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield lb/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>47.20</td>
</tr>
<tr>
<td>2</td>
<td>57.20</td>
</tr>
<tr>
<td>3</td>
<td>64.80</td>
</tr>
</tbody>
</table>

S.E./mean = 8.41 lb/ac.

### BASAL CONDITIONS:

(i) (a) Nil. (b) Banni (millets) and Motu. (c) 4 C.L. of F.Y.M. (ii) (a) Saline soil. (b) N.A. (iii) 3.7193. (iv) (a) 2 harrowings and 2 ploughings. (b) N.A. (c) 40 lb. ac. (d) 15". (e) N.A. (v) Nil. (vi) Saundhia-forage variety. (vii) Unirrigated. (viii) Nil. (ix) 2.70'. (x) 13.1.1953

### DESIGN:

(i) R.B.D.: (a) 3. (b) N.A. (ii) 4. (iv) (a) J/2 x (b) 27° x 15 5°. (v) J' alround. (vi) Yes.

### GENERAL:

(i) Good. (ii) Nil. (iii) Fodder yield. (iv) (a) 1951. (b) 1952. (c) Nil. (d) (a) and (b) N.A. (e) and (f) Nil.

### RESULTS:

(i) 1440 lb/ac. (ii) 3/5.5 lb/ac. (iii) Treatments do not differ significantly.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield lb/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1570</td>
</tr>
<tr>
<td>2</td>
<td>1246</td>
</tr>
<tr>
<td>3</td>
<td>1503</td>
</tr>
</tbody>
</table>

S.E./mean = 152.7 lb/ac.

---

**Crop:** Jowar (*Kharif*),  
**Site:** Agri. Res. Stn., Surat.  
**Ref:** Gj. 49(9).  
**Type:** 'M'.

Object:—To study the effect of Tur grown with and without P₂O₅ on the succeeding cereal crop Jowar.

### BASAL CONDITIONS:

(i) (a) Tur—Jowar. (b) Tur. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 24.7.1949. (iv) (a) N.A. (b) Drilled. (c) 8 to 10 lb. ac. (d) 15°. (e) N.A. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) 2 interculturings on 14.8.1949 and 25.8.1949; thinning on 24.8.1949.

---

**Crop:** Jowar (*Kharif*),  
**Site:** Agri. Res. Stn., Harij.  
**Ref:** Gj. 53(364).  
**Type:** 'M'.

Object:—To study the effect of Sulphur on yield and in improving the soil.
2. TREATMENTS:
1. Control (no P₂O₅).
2. 50 lb./ac. of P₂O₅ as Super to Tur in Rabi.
3. 100 lb./ac. of P₂O₅ as Super to Tur in Rabi.
4. 150 lb./ac. of P₂O₅ as Super to Tur in Rabi.
5. Cotton Soyag in Rabi.

3. DESIGN:
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'x30'. (b) 30'x18'. (v) 6' all round the net plot. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 1412 lb./ac.
(ii) 162.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1391</td>
<td>72.6</td>
</tr>
<tr>
<td>2.</td>
<td>1452</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>1323</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>1484</td>
<td></td>
</tr>
</tbody>
</table>

Crop:— Jowar (Kharif).
Site:— Agri. Res. Stn., Surat.

Ref:— Gj. 50(16).
Type:— ’M’.

Object:— To study the effect of Tur grown with and without P₂O₅ on the succeeding crop Jowar.

1. BASAL CONDITIONS:
(i) (a) Tur-Jowar. (b) Tur. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 3.8.1950. (iv) (a) N.A. (b) Drilled. (c) 8—10 lb./ac. (d) 3'x1'. (e) N.A. (f) Nil. (v) B.P.—53. (vi) Unirrigated. (vii) 4 intercuturings and one thinning. (ix) 29.40'. (x) 27.1.1951.

2. TREATMENTS:
1. Control (no P₂O₅).
2. 50 lb./ac. of P₂O₅ as Super to Tur in Rabi.
3. 100 lb./ac. of P₂O₅ as Super to Tur in Rabi.
4. 150 lb./ac. of P₂O₅ as Super to Tur in Rabi.
5. Cotton Soyag in Rabi.

3. DESIGN:
(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'x30'. (b) 30'x18'. (v) 6' all round the net plot. (vi) Yes.

4. GENERAL:
(i) Growth poor in the begining. Improved later. (ii) Attack of borer and also of striga observed. (iii) Grain and straw yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 1122 lb./ac.
(ii) 273.5 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1182</td>
<td>122.4</td>
</tr>
<tr>
<td>2.</td>
<td>1178</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>958</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>1353</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>942</td>
<td></td>
</tr>
</tbody>
</table>

Crop:— Jowar (Kharif).
Site:— Agri. Res. Stn., Surat.

Ref:— Gj. 50(16).
Type:— ’M’.

Object:— To study the effect of Tur grown with and without P₂O₅ on the succeeding crop Jowar.
Crop: Jowar (Kharif).

Object: To study the effect of Tur grown with and without P2O5 on the succeeding crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) Tur - Jowar. (b) Tur. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 23.7.1952. (iv) (a) N.A. (b) Drilled. (c) 8 to 10 lb./ac. (d) 3' x 1'. (c) Nil. (vi) B.P.—33. (vii) Unirrigated. (viii) Thinning on 22.8.1952; weeding on 2.9.1952; interculturing on 37.8.1952; 30.9.1952; 10.10.1952. (ix) 20.18'. (x) 20.1.1953.

2. TREATMENTS:
   1. Control (no P2O5).
   2. 50 lb./ac. of P2O5 as Super to Tur in Rabi.
   3. 100 lb./ac. of P2O5 as Super to Tur in Rabi.
   4. 150 lb./ac. of P2O5 as Super to Tur in Rabi.
   5. Cotton Suyog in Rabi.

3. DESIGN:
   (i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' x 30'. (b) 30' x 18'. (v) 6' all round the net plot. (vi) Yes.

4. GENERAL:
   (i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1918-1954. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Experiment failed in the year 1951.

5. RESULTS:
   (i) 852 lb./ac.
   (ii) 173.4 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
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<tr>
<th>Treatment</th>
<th>Av. yield</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>866</td>
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<tr>
<td>2.</td>
<td>823</td>
</tr>
<tr>
<td>3.</td>
<td>845</td>
</tr>
<tr>
<td>4.</td>
<td>931</td>
</tr>
<tr>
<td>5.</td>
<td>797</td>
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<tr>
<td>S.E./mean</td>
<td>77.6 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Jowar (Kharif).

Object: To study the effect of Tur grown with and without P2O5 on the succeeding crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) Jowar-Tur. (b) Cotton and Tur. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 21.7.1953. (iv) (a) 2 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3' x 1'. (e) N.A. (v) Nil. (vi) B.P.—53 (late). (vii) Unirrigated. (viii) Once thinning, twice weeding and three interculturings. (ix) 58'. (x) 3.2.1954.

2. TREATMENTS:
   1. Control (no P2O5).
   2. 50 lb./ac. of P2O5 as Super to Tur in Rabi.
   3. 100 lb./ac. of P2O5 as Super to Tur in Rabi.
   4. 150 lb./ac. of P2O5 as Super to Tur in Rabi.
   5. Cotton Suyog in Rabi.

3. DESIGN:
   (i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' x 30'. (b) 30' x 18'. (v) 6' all round the net plot. (vi) Yes.
4. GENERAL:
(i) Jowar in rotation with Tur was taller than Jowar after cotton. Jowar after cotton was late by about 15 days. (ii) Attack of Stemborer to Jowar to the extent of about 50%. (iii) Periodical height and weight of kadi were taken. (iv) (a) 1948–1954. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Season was abnormal. (vii) Nil.

5. RESULTS:
(i) 1347 lb./ac.
(ii) 112.1 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<tr>
<td>2.</td>
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<td>3.</td>
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</tr>
<tr>
<td>4.</td>
<td>1541</td>
</tr>
<tr>
<td>5.</td>
<td>976</td>
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</tbody>
</table>

S.E./mean = 50.0 lb./ac.

Crop :- Jowar (Kharif).
Object :- To study the N and P₂O₅ requirements of Jowar without a basal dose of F.Y.M.

1. BASAL CONDITIONS:
(i) (a), (b) and (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) N.A. (iv) (a) to (e) N.A. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS:
All combinations of (1) and (2)
(1) 4 levels of N as A/S: N₀ = 0, N₁ = 20, N₂ = 40 and N₃ = 60 lb./ac.
(2) 4 levels of P₂O₅ as Super: P₀ = 0, P₁ = 20, P₂ = 40 and P₃ = 60 lb./ac.

3. DESIGN:
(i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27' x 42'. (b) 15' x 30'. (v) 6' all round. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1948–1951. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 1710 lb./ac.
(ii) 266.4 lb./ac.
(iii) Only main effect of N is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
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<th>N₃</th>
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<td>1730</td>
<td>1742</td>
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Mean       | 1649| 1706| 1683| 1800| 1710 |
S.E. of any marginal mean = 66.6 lb./ac.
S.E. of body of table = 133.2 lb./ac.
Object:—To study the N and P$_2$O$_5$ requirements of Jowar without a basal dose of F.Y.M.

1. BASAL CONDITIONS:
   (i) (a), (b) and (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 7.8.1949/2.9.1949. (iv) (a) to (c) N.A. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) 4 interculturings on 27, 28, 29, and 30. Thinning on 2.9.1949. Weeding on 27.8.1949. (ix) 12.50'. (x) 5.2.1950.

2. TREATMENTS:
   All combinations of (1) and (2):
   (1) 4 levels of N as A/S: N$_0$=0, N$_1$=20, N$_2$=40 and N$_3$=60 lb./ac.
   (2) 4 levels of P$_2$O$_5$ as Super: P$_0$=0, P$_1$=20, P$_2$=40 and P$_3$=60 lb./ac.

3. DESIGN:
   (i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27 x 42'. (b) 15' x 30'. (v) 6' all round. (vi) Yes.

4. GENERAL:
   (i) Plots receiving higher dose of N showed vigorous growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948-951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 1332 lb./ac.
   (ii) 213.6 lb./ac.
   (iii) Only main effect of N is significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>N$_0$</th>
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<th>N$_2$</th>
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<td>P$_3$</td>
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<td>1414</td>
<td>1632</td>
</tr>
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</table>

S.E. of any marginal mean = 53.4 lb./ac.
S.E. of body of table = 106.5 lb./ac.

Crop :- Jowar (Kharif).
Ref :- Gj. 49(115).
Type :- 'M'.

Object:—To study the N and P$_2$O$_5$ requirements of Jowar without a basal dose of F.Y.M.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) Cotton. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 7.8.1950. (iv) (a) N.A. (b) Drilling. (c) 8 to 10 lb./ac. (d) 3' x 3'. (e) N.A. (f) Nil. (v) (a) to (e) N.A. (vi) B.P.—53. (vii) Unirrigated. (viii) 3 interculturings on 24, 25.9.1950 and 10.10.1950; weeding on 29.8.1950 and thinning on 31.8.1950. (ix) 29.4'. (x) 23.11.1951.

2. TREATMENTS:
   All combinations of (1) and (2):
   (1) 4 levels of N as A/S: N$_0$=0, N$_1$=20, N$_2$=40 and N$_3$=60 lb./ac.
   (2) 4 levels of P$_2$O$_5$ as Super: P$_0$=0, P$_1$=20, P$_2$=40 and P$_3$=60 lb./ac.

3. DESIGN:
   (i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27 x 42'. (b) 15' x 40'. (v) 6' all round. (vi) Yes.
4. GENERAL:
(i) Vigorous growth in plots receiving higher doses of N. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948–1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 1190 lb./ac. (ii) 210.5 lb./ac. (iii) Only the main effect of N is highly significant. (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
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<th>N₂</th>
<th>N₃</th>
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<td>1428</td>
<td>1573</td>
<td>1254</td>
</tr>
</tbody>
</table>

Mean 949 1119 1245 1448 1190

S.E. of marginal means = 52.6 lb./ac.
S.E. of body of table = 105.3 lb./ac.

---

Crop: Jowar (Kharif).

Ref.: Gj. 51(18).
Type: 'M'.

Object: To study the N and P₀₆ requirements of Jowar without a basal dose of F.Y.M.

1. BASAL CONDITIONS:
(i) (a) Jowar—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Söl.L. (iii) 14.8.1951. (iv) (a) N.A. (b) Drilling. (c) 8 to 10 lb./ac. (d) 3'x1'. (e) -. (v) Nil. (vi) B.P.—53. (vii) Unirigated. (viii) Thinning on 7.9.1951; interculturing on 5.9.1951, 21.8.1951 and 11.10.1951; and weeding on 31.8.1951. (ix) 23.22'. (x) 2 and 3.2.1952.

2. TREATMENTS:
All combinations of (1) and (2)
(1) 4 levels of N : N₀=0, N₁=20, N₂=40 and N₃=60 lb./ac.
(2) 4 levels of P₀₆ : P₀₆=0, P₁=20, P₂=40 and P₃=60 lb./ac.

3. DESIGN:
(i) 4x4 Facci. in R.B.D. (ii) 16. (b) N.A. (iii) 3. (iv) (a) 27'x42'. (b) 15'x30'. (x) 6' ring all round the net plot. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Attack of stem borer in the earlier stage and attack of shoot borer at earing time observed. (iii) Grain and fodder yield. (iv) (a) 1948–1951. (b) No. (c) Nil. (v) (a) Andh. and Surat. (b) N.A. (vi) Nil. (vii) Originally 4 replications were laid out. But replication No. 1 was dropped as majority of the plot yields were low due to attack of stem borer.

5. RESULTS:
(i) 1556 lb./ac. (ii) 284.5 lb./ac. (iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
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<th>N₂</th>
<th>N₃</th>
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<td>1793</td>
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<tr>
<td>Mean</td>
<td>1356</td>
<td>1587</td>
<td>1774</td>
<td>1506</td>
<td>1556</td>
</tr>
</tbody>
</table>

S.E. of any marginal mean = 82.1 lb./ac.
S.E. of body of table = 164.2 lb./ac.

---

**Crop:** Jowar (*Kharif*).
**Site:** Agri. Res. Strn., Surat.
**Ref.:** Gj. 48(6).
**Type:** 'M'.

Object: To study the N and P₂O₅ requirements of Jowar with a basal dose of F.Y.M.

1. **BASAL CONDITIONS:**
   (i) (a) Cotton—Jowar. (b) Cotton. (c) Nil. (ii) (a) Black cotton seed. (b) Refer soil analysis, Surat.
   (iii) N.A. (iv) (a) N.A. (b) Drilled. (c) 10 lb./ac. (d) 3' x 1'. (e) N.A. (v) 5 C.L. ac of P.Y.M.
   (vi) B.P.—53. (vii) Unirrigated. (viii) 1 thinning, 3 interculturalings and 1 weeding. (ix) 15.70′.
   (x) N.A.

2. **TREATMENTS:**
   All combinations of (1) and (2)
   (1) 4 levels of N as A/S: N₀=0, N₁=20, N₂=40 and N₃=60 lb./ac.
   (2) 4 levels of P₂O₅ as Super: P₀=0, P₁=20, P₂=40 and P₃=60 lb./ac.

3. **DESIGN:**
   (i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27′ x 43′. (b) 15′ x 30′. (v) 6′ ring all round the net plot. (vi) Yes.

4. **GENERAL:**
   (i) Normal. (ii) Nil. (iii) Grain yield, (iv) (a) 191.5—195. (b) N.A. (c) N.A. (v) (a) and (b) N.A.
   (vi) Nil. (vii) Two sites are maintained for the experiment and the experiment is brought to same site every alternate year.

5. **RESULTS:**
   (i) 1858 lb./ac.
   (ii) 270.0 lb./ac.
   (iii) None of the effects is significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
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<th>N₂</th>
<th>N₃</th>
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<td>P₂</td>
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<td>1749</td>
<td>1877</td>
<td>1830</td>
<td>1977</td>
<td>1858</td>
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</tbody>
</table>

S.E. of any marginal mean = 67.5 lb./ac.
S.E. of body of table = 135.0 lb./ac.
Object: To find out the N and P<sub>2</sub>O<sub>5</sub> requirements of Jowar with a basal dose of F.Y.M.

1. **BASAL CONDITIONS**:
   (i) (a) Cotton—Jowar, (b) Cotton, (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat.
   (iii) 7.8.1949. (iv) (a) N.A. (b) Drilled. (c) 10 lb./ac. (d) 3′x1′. (e) —. (v) 5 C.L./ac. of F.Y.M.

2. **TREATMENTS**:
   All combinations of (1) and (2)
   (1) 4 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.
   (2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.
   N as G.N.C and P<sub>2</sub>O<sub>5</sub> as Super. Manuring done on 30.7.1949 by broadcast.

3. **DESIGN**:
   (i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 42′x27′. (b) 30′x15′. (v) 6′ ring all round the net plot. (vi) Yes.

4. **GENERAL**:
   (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1952. (b) No. (c) N.A. (v) (a) Amreli and Surat, (b) N.A. (vi) and (vii) Nil.

5. **RESULTS**:
   (i) 1493 lb./ac.
   (ii) 150.6 lb./ac.
   (iii) Main effect of N alone is highly significant.
   (iv) Av. yield of grain in lb./ac.

<table>
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<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>N&lt;sub&gt;3&lt;/sub&gt;</th>
<th>Mean</th>
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</thead>
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Mean 1150 1300 1650 1872 1493
S.E. of any marginal mean =37.6 lb./ac.
S.E. of body of table =75.3 lb./ac.
3. DESIGN:
   (i) 4x4 Fact. in R.B.D.  
   (ii) 16.  
   (iii) N.A.  
   (iv) 4.  
   (v) 6' ring all round the net plot.  
   (vi) Yes.

4. GENERAL:
   (i) Good.  
   (ii) Nil.  
   (iii) Grain yield.  
   (iv) 1948-1952.  
   (v) Amreli.  
   (vi) and (vii) Nil.

5. RESULTS:
   (i) 1384 lb./ac.  
   (ii) 200.2 lb./ac.  
   (iii) Main effect of N alone is highly significant.  
   (iv) Av. yield of grain in lb./ac.

<table>
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<th>N2</th>
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</tbody>
</table>

Mean 1010 1324 1464 1706 1384

S.E. of any marginal mean = 50.5 lb./ac.
S.E. of body of table = 101.3 lb./ac.

Object: To study the N and P2O5 requirements of Jowar with a basal dose of F.Y.M.

1. BASAL CONDITIONS:
   (i) (a) Jowar-Cotton.  
   (b) Cotton.  
   (c) Nil.  
   (ii) (a) Black cotton soil.  
   (b) Refer soil analysis, Surat.  
   (iii) 23.7.1951.  
   (iv) a) N.A.  
   (b) Drilling.  
   (c) 10 lb./ac.  
   (d) Y' x 1.3 - .  
   (e) 5 C.L./ac. of P.Y.M.  
   (v) B P-53.  
   (vi) Irrigated.  
   (vii) Thinning once, weeding twice and interculving thrice.  
   (ix) 23.2.1957.

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 4 levels of N: N0 = 0, N1 = 25, N2 = 40 and N3 = 62 lb./ac.
   (2) 4 levels of P2O5: P0 = 0, P1 = 20, P2 = 40 and P3 = 60 lb./ac.
   N as G.N.C. and P2O5 as Super.

3. DESIGN:
   (i) 4x4 Fact. in R.B.D.  
   (ii) 16.  
   (iii) N.A.  
   (iv) 4.  
   (v) 6' ring all round the net plot.  
   (vi) Yes.

4. GENERAL:
   (i) Good.  
   (ii) Severe attack of Stem-borer in the earlier stages and attack of shoot borer at the earing time observed.  
   (iii) Grain and straw yield.  
   (iv) 1948-1952.  
   (v) a) N.A.  
   (b) Amreli.  
   (c) N.A.  
   (vi) and (vii) Nil.

5. RESULTS:
   (i) 17.79 lb./ac.  
   (ii) 273.2 lb./ac.  
   (iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>N₃</th>
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</tr>
</thead>
<tbody>
<tr>
<td>P₀</td>
<td>1575</td>
<td>1652</td>
<td>2166</td>
<td>1824</td>
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<td>P₁</td>
<td>1593</td>
<td>1815</td>
<td>1621</td>
<td>1754</td>
<td>1696</td>
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<tr>
<td>P₂</td>
<td>1752</td>
<td>1815</td>
<td>1912</td>
<td>1922</td>
<td>1860</td>
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<tr>
<td>P₃</td>
<td>1559</td>
<td>1488</td>
<td>1630</td>
<td>1552</td>
<td>1557</td>
</tr>
</tbody>
</table>

Mean 1620 1693 1832 1773 1729

S.E. of any marginal mean = 63.8 lb./ac.
S.E. of body of table = 136.6 lb./ac.

Crop :- Jowar (Kharif).


Ref :- Gj. 52(358).

Type :- 'M'.

Object :- To study the N and P₂O₅ requirements of Jowar with a basal dose of F.Y.M.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) N.A. (c) N.A. (d) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 23.7.1952.
   (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3'×1'. (e) 5 C.L./ac. of F.Y.M. (vi) B.P.—53. (vii) Unirrigated. (viii) One interculturing and one weeding. (ix) 20.18'. (x) N.A.

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 4 levels of N : N₀=0, N₁=20, N₂=40 and N₃=60 lb./ac.
   (2) 4 levels of P₂O₅ : P₀=0, P₁=20, P₂=40 and P₃=60 lb./ac.
   N as G.N.C. and P₂O₅ as Super.

3. DESIGN:
   (i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' ring around. (vi) Yes.

4. GENERAL:
   (i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948—1952. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 779 lb./ac.
   (ii) 174.0 lb./ac.
   (iii) Main effect of N alone is significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>N₃</th>
<th>Mean</th>
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<tr>
<td>P₀</td>
<td>813</td>
<td>656</td>
<td>784</td>
<td>786</td>
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<tr>
<td>P₁</td>
<td>888</td>
<td>811</td>
<td>624</td>
<td>653</td>
<td>744</td>
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<tr>
<td>P₂</td>
<td>891</td>
<td>840</td>
<td>699</td>
<td>726</td>
<td>792</td>
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<td>P₃</td>
<td>944</td>
<td>825</td>
<td>694</td>
<td>811</td>
<td>819</td>
</tr>
</tbody>
</table>

Mean 884 783 700 747 779

S.E. of any marginal mean = 43.5 lb./ac.
S.E. of body of table = 87.0 lb./ac.
Crop :- Jowar (Kharif).

Object : - To study the N, P₂O₅ and F.Y.M. requirements of Jowar.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) N.A. (c) N.A. (d) N.A. (e) Deep black cotton soil. (f) Refer soil analysis, Surat. (iii) 3.8.1952.
(iv) (a) nil. (b) Drilling. (c) 5 to 10 lb./ac. (d) 3' x 1'. (e) " " (f) N.A. (g) B.P. - 53. (h) Unirrigated.
(vii) Three interculturing, one weeding and one thinning. (viii) 20.15. (x) N.A.

2. TREATMENTS:
All combinations of (1), (2) and (3)
(1) 3 levels of N: N₁ = 40, N₂ = 60 and N₃ = 80 lb./ac.
(2) 2 levels of P₂O₅: P₁ = 20 and P₂ = 40 lb./ac.
(3) 2 levels of F.Y.M.: F₁ = 5 and F₂ = 10 C.L./ac.

3. GENERAL:
(i) Good. (iii) N.A. (iii) Grain and fodder yield. (iv) a) 1952: N.A. b) N.A. (c) N.A. (d) N.A. (e) N.A. (f) N.A. (g) N.A.

4. RESULTS:
(i) 1290 lb./ac.
(ii) 722.1 lb./ac.
(iii) Only the interaction N x F is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>N₁</th>
<th>N₂</th>
<th>N₃</th>
<th>Mean</th>
<th>F₁</th>
<th>F₂</th>
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<tr>
<td>P₁</td>
<td>903</td>
<td>1406</td>
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<td>P₂</td>
<td>1209</td>
<td>1629</td>
<td>1512</td>
<td>1450</td>
<td>1517</td>
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<tr>
<td>Mean</td>
<td>1056</td>
<td>1518</td>
<td>1297</td>
<td>1290</td>
<td>1294</td>
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<tr>
<td>F₁</td>
<td>1341</td>
<td>1633</td>
<td>1507</td>
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<tr>
<td>P₂</td>
<td>771</td>
<td>1402</td>
<td>1686</td>
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</tr>
</tbody>
</table>

S.E. of marginal mean of N = 139.5 lb./ac.
S.E. of marginal mean of P or F = 171.4 lb./ac.
S.E. of body of N x P or N x F table = 255.1 lb./ac.
S.E. of body of table = 2.85 lb./ac.

Crop :- Jowar (Kharif).

Object :- To study the N, P₂O₅ and F.Y.M. requirements of Jowar.

1. BASAL CONDITIONS:
(i) (a) Jowar - Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) N.A. (iv) (a) 2 to 3 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3' x 1'. (e) " " (f) Nil. (vi) B.P. - 53 (late). (vii) Unirrigated. (viii) 2 weeding, 2 thinning and 3 interculturing. (ix) 38°. (x) N.A.
2. TREATMENTS:
All combinations of (1), (2) and (3)
(1) 3 levels of N: $N_1 = 40$, $N_2 = 60$ and $N_3 = 80$ lb./ac.
(2) 2 levels of $P_2O_5$: $P_1 = 20$ and $P_2 = 40$ lb./ac.
(3) 2 levels of F.Y.M.: $F_1 = 5$ and $F_2 = 10$ C.L./ac.
N as A/S and $P_2O_5$ as Super.

3. DESIGN:
(i) $3 	imes 2 	imes 2$ Fact in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) $42' \times 18'$. (b) $30' \times 12'$. (v) $6' \times 3'$. (vi) Yes.

4. GENERAL:
(i) In the early stages of Jowar growth, some of the plots were gappy due to Stem-borer attack and in most of the plots 3 to 4 shoots sprouted per hill and remaining were stunted and unreared due to lack of moisture in later part of the season. (ii) There was attack of Stem-borer of intensity 85%. (iii) Height of Jowar plant, number of plants per plot and weight of Kd/plot was taken. (iv) (a) 1948—1954 (modified in 1952-53), (b) Two different plots for experiment were kept. The same treatments were being followed to the same sub-plot in every alternate year. (c) N.A. (v) (a) and (b) N.A. (vi) $46''$ of rainfall in July and August in place of $42''$ average for every year. (vii) Nil.

5. RESULTS:
(i) 579 lb./ac.
(ii) 207.3 lb./ac.
(iii) Only the interaction N x F is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>Mean</th>
<th>F1</th>
<th>F2</th>
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<td>546</td>
<td>610</td>
<td>601</td>
<td>575</td>
<td>626</td>
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<tr>
<td>N2</td>
<td>530</td>
<td>580</td>
<td>563</td>
<td>558</td>
<td>539</td>
<td>576</td>
</tr>
<tr>
<td>Mean</td>
<td>588</td>
<td>563</td>
<td>586</td>
<td>579</td>
<td>557</td>
<td>601</td>
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<tr>
<td>N1</td>
<td>557</td>
<td>459</td>
<td>655</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N2</td>
<td>619</td>
<td>667</td>
<td>517</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

S.E. of marginal mean of N = 52.0 lb./ac.
S.E. of marginal mean of F or P = 42.4 lb./ac.
S.E. of body of N x P or N x F table = 73.4 lb./ac.
S.E. of body of P x F table P x F = 59.8 lb./ac.


Object:—To study the suitability of using Di-calcium phosphate in place of Super.

1. BASAL CONDITIONS:
(i) (a) Cotton—Jowar. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 3.8.1952. (iv) (a) N.A. (b) Drilling. (c) 8 to 10 lb./ac. (d) $3' \times 1'$. (e) N.A. (v) C.L./ac. of F.Y.M.+60 lb./ac. of N as A/S. (vi) B.P.—53. (vii) Unirrigated. (viii) 4 interculturings, weedings and 1 thinning. (ix) 19.98'. (x) 23.1.1953.

2. TREATMENTS:
1. Di-calcium phosphate at 20 lb./ac. of $P_2O_5$.
2. Super at 20 lb./ac. of $P_2O_5$.

3. DESIGN:
(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) $21' \times 42'$. (b) $9' \times 30'$. (v) $6'$ ring round the net plot. (vi) Yes.
4. GENERAL:
(i) Vigorous growth in the beginning. Later affected adversely due to lack of sufficient moisture. (ii) Nil.
(iii) Grain and fodder yield. (iv) (a) 1952—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 569 lb./ac.
(ii) 279 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Treatment Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>611</td>
</tr>
<tr>
<td>2.</td>
<td>527</td>
</tr>
</tbody>
</table>

S.E./mean = 85.9 lb./ac.

Crop := Jowar (Kharif).  

Ref := Gj. 53 (288).

Type := 'M'.

Object := To study the suitability of using Di-calcium phosphate in place of Super.

1. BASAL CONDITIONS:
(i) (a) Jowar—Cotton. (b) Cotton. (c) Nil. (d) Black cotton soil. (b) Refer soil analysis, Surat.
(ii) 13.8.1953. (iv) (a) 2 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3' × 1'. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+60 lb./ac. of N as A/S. (vi) B.P.—53 (late). (vii) Unirrigated. (viii) 2 weedings, 2 thinning and 4 interculturings. (ix) 58°. (x) 12.2.1954.

2. TREATMENTS:
1. Dicalcium phosphate at 20 lb./ac. of P₂O₅.
2. Super at 20 lb./ac. of P₂O₅.

3. DESIGN:
(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42' × 21'; (b) 30' × 9'. (v) 6' round the net plot. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Stem-borer attack—85 to 90%. (iii) Grain yield. (iv) 1952-53. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) No rains in the later part of the season. (vii) Nil.

5. RESULTS:
(i) 855 lb./ac.
(ii) 218.2 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Treatment Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>807</td>
</tr>
<tr>
<td>2.</td>
<td>903</td>
</tr>
</tbody>
</table>

S.E./mean = 62.9 lb./ac.

Crop := Jowar (Kharif).  

Ref := Gj. 52 (234).

Type := 'M'.

Object := To study the effect of calcium cyanamide on growth and yield of Jowar.

1. BASAL CONDITIONS:
(i) (a) Cotton—Jowar. (b) Cotton. (c) 3 C.L./ac. of F.Y.M. (ii) (a) Deep block. (b) Refer soil analysis, Surat. (iii) 9.8.1953. (iv) (a) N.A. (b) Drilling (c) 8 to 10 lb./ac. (d) 3' × 1'. (e) N.A. (v) N.A. (vi) B.P.—53. (vii) Unirrigated. (viii) 3 interculturings, 2 weedings and 1 thinning. (ix) 19.58°. (x) 21.1.1953.
2. TREATMENTS:
1. 60 lb./ac. of N as A/S.
2. 60 lb./ac. of N as G.N.C. and A/S in 1 : 1 ratio.
3. 60 lb./ac. of N as Calcium cyanamide.
4. 60 lb./ac. of N as G.N.C. and Calcium cyanamide in 1 : 1 ratio.

3. DESIGN:
(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 74' × 30'. (b) 62' × 18'. (v) 6' all round. (vi) Yes.

4. GENERAL:
(i) Poor. (ii) Severe attack of Stem-borer. (iii) Grain and fodder yield. (iv) (a) 1952—N.A. (b) No, (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 156 lb./ac.
(ii) N.A.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>210</td>
</tr>
<tr>
<td>2.</td>
<td>99</td>
</tr>
<tr>
<td>3.</td>
<td>98</td>
</tr>
<tr>
<td>4.</td>
<td>217</td>
</tr>
</tbody>
</table>

S.E./mean = N.A.

Crop: Jowar. (Kharif).
Type: 'M'.

Object: To study the effect of calcium cyanamide on growth and yield of Jowar.

1. BASAL CONDITIONS:
(i) (a) Jowar-Cotton. (b) Cotton. (c) NIL. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat, (i) 21.7.1953. (iv) (a) 2 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3' × 1'. (e) —. (v) 5 C.L./ac. of F.Y.M, (vi) B.P.—53 (late). (vii) Unirrigated. (viii) 2 weedings, 4 interculturings and 1 thinning. (ix) 53°, (x) 8.2.1954.

TREATMENTS:
1. 60 lb./ac. of N as A/S.
2. 60 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
3. 60 lb./ac. of N as Calcium cyanamide.
4. 60 lb./ac. of N as Calcium cyanamide and G.N.C. in 1 : 1 ratio.

3. DESIGN:
(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) 74' × 30'. (b) 62' × 18'. (v) 6' all round the plot. (vi) Yes.

4. GENERAL:
(i) Growth was stunted and 2 to 3 shoots sprouted per hill due to attack of Stem-borer. (ii) Severe attack of Stem-borer-85 to 90%. No control measures taken. (iii) Grain and Kadai yield. (iv) (a) 1952—1954. (b) No. (c) NIL. (v) (a) and (b) NIL. (vi) and (vii) Nil.

5. RESULTS:
(i) 668 lb./ac.
(ii) 111.7 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>734</td>
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<tr>
<td>2.</td>
<td>854</td>
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<tr>
<td>3.</td>
<td>900</td>
</tr>
<tr>
<td>4.</td>
<td>293</td>
</tr>
</tbody>
</table>

S.E./mean = 79.0 lb./ac.
Crop: Jowar (Kharif and fodder crop).  

Object: To study the effect of Calcium cyanamide on the yield of Jowar.

1. BasiAL CONDITIONS:
   (i) (a) Cotton-Jowar. (b) Jowar. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Alluvial, medium black. (b) Ref. Site analysis, Viramgam. (iii) 10.7.1950. (iv) (a) 3 harrowings and no ploughings. (b) Drilling (c) 30 lb/ac. (d) Between rows—18" and between plants—irregular (e) N.A. (v) 5 C.L./ac. of F.Y.M in May 1953, broadcast. (vi) C-10-2 (fodder mid-data). (vii) Unirrigated. (viii) 1 weeding on 15.1.1953; 2 interculturings on 23.7.1953 and 8.8.1953. (ix) 37.85°. (x) N.A.

2. TREATMENTS:
   1. Control (no manure).
   2. 60 lb/ac. of N as A/S.
   3. 60 lb/ac. of N as A/S and G.N.C. in 1:1 ratio.
   4. 60 lb/ac. of N as Calcium cyanamide.
   5. 60 lb/ac. of N as Calcium cyanamide and G.N.C. in 1:1 ratio.
   N applied one month after sowing.

3. DESIGN:
   (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (z) N.A. (b) 7×12× (v) 2 rows round the net plot. (vi) Yes.

4. GENERAL:
   (i) Due to unusual rains, flooding occurred in the plots affecting the crop considerably. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1953-1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Jowar crop was a fodder crop and the yield data for fodder was also analysed.

5. RESULTS:

Grain

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>541 lb/ac.</td>
<td>38.71 lb/ac.</td>
</tr>
<tr>
<td>2.</td>
<td>553</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>512</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>551</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>604</td>
<td></td>
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</tbody>
</table>

Fodder

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>6553 lb/ac.</td>
<td>68.2 lb/ac.</td>
</tr>
<tr>
<td>2.</td>
<td>7336</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>6201</td>
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<tr>
<td>4.</td>
<td>6957</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>5752</td>
<td></td>
</tr>
</tbody>
</table>

Crop: Jowar (Kharif).  
Centre: Chorasi.

Object: To study the response of Jowar to N applied singly and in combination with P2O5.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) Cotton at Variz; Cotton and Jowar at Lajpur. (c) 15 to 20 C.L./ac. of F.Y.M. at Variz No manure at Lajpur. (ii) Black in Variz and loamy in Lajpur. (iii) 5 C.L./ac. of F.Y.M. (iv) N.A. (v) (a), (b) and (c) Y.A. (d) Between rows—30". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (a) 15.1.1953.

2. TREATMENTS:
   1. Control (no manure).
   2. 60 lb/ac. of N.
   3. 60 lb/ac. of N + 20 lb/ac. of P2O5.
   N applied as a mixture of A/S and G.N.C.; P2O5 applied as Super.
3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list, few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) (a) 72' x 30'. (b) 60' x 18'. (iv) Yes.

4. GENERAL:
(i) Normal. (ii) No. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 1392 lb./ac.
(ii) 411.0 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1336</td>
</tr>
<tr>
<td>2.</td>
<td>1275</td>
</tr>
<tr>
<td>3.</td>
<td>1565</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>205.5 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Jowar (Kharif).
Centre: Mandis.

Object: To study the response of Jowar to N applied singly and in combination with P₂O₅.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Cotton. (c) No manuring except in one village at one site where 5 C.L./ac. of F.Y.M. was given. (ii) Alluvial with medium level for one trial in each village, Murum with zinc-stone at remaining site. (iii) 5 to 7 C.L./ac. of F.Y.M. (iv) Local variety. (Late) (v) (a), (b) and (c) N.A. d) Between-rows—2'; between plants 1', to 2'. (c) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 34.62°. (x) 24.12.1952 to 21.1.1953.

2. TREATMENTS:
1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P₂O₅.
N as A/S+G.N.C. in 1:1 ratio and P₂O₅ as Super.

3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list, few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) (a) 72' x 30'. (b) 60' x 18'. (iv) Yes.

4. GENERAL:
(i) Due to lack of rain, growth was not normal in some plots. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 1311 lb./ac.
(ii) 311.4 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1100</td>
</tr>
<tr>
<td>2.</td>
<td>1249</td>
</tr>
<tr>
<td>3.</td>
<td>1585</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>155.70 lb./ac.</td>
</tr>
</tbody>
</table>
Object:—To study the response of Jowar to N applied singly and in combination with $P_2O_5$.

1. **BASAL CONDITIONS**:
   (i) (a) N.A. (b) Cotton. (c) F.Y.M. and compost manure 1800 lb./ac. (ii) Medium black. (iii) 250 lb./ac. of F.Y.M. (iv) Local (sodium-late). (v) (a) to (c) N.A. (vi) Between rows—24". (e) N.A. (vii) N.A. (viii) Unirrigated. (ix) N.A. (x) 26.69'' (x) 24.1.1953.

2. **TREATMENTS**:
   1. Control.
   2. 50 lb./ac. of N.
   3. 60 lb./ac. of N + 20 lb./ac. of $P_2O_5$.

3. **DESIGN**:
   (i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list, few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) (a) 72' x 30'. (b) 60' x 18'. (iv) Yes.

4. **GENERAL**:
   (i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. **RESULTS**:
   (i) 542.5 lb./ac.
   (ii) 93.97 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.
   Treatment | Av. yield
   --- | ---
   1. | 508.0
   2. | 419.2
   3. | 310.3
   S.E./mean | 48.98 lb./ac.

---

Object:—To study the response of Jowar to Napplied singly and in combination with $P_2O_5$.

1. **BASAL CONDITIONS**:
   (i) (a) N.A. (b) Cotton (c) Nil. (ii) Loamy soil. (iii) 5 C.L./ac. of F.Y.M. (iv) Local. (v) (a) to (e) N.A. (d) Between rows—72' and between plants—18'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 51.80°. (x) 7 to 17.1.1953.

2. **TREATMENTS**:
   1. Control (no manure).
   2. 60 lb./ac. of N.
   3. 60 lb./ac. of N + 20 lb./ac. of $P_2O_5$.

3. **DESIGN**:
   (i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list, few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) (a) 72' x 30'. (b) 60' x 18'. (iv) Yes.

4. **GENERAL**:
   (i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.
5. RESULTS:

(i) 1623 lb./ac.
(ii) 75.42 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1864</td>
</tr>
<tr>
<td>2.</td>
<td>1583</td>
</tr>
<tr>
<td>3.</td>
<td>1422</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>53.34 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Jowar (Kharif).
Centre: Olpad.
Ref: Gj. 52(244).
Type: 'M'.

Object: To study the response of Jowar to N applied singly and in combination with P<sub>2</sub>O<sub>5</sub>.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Cotton. (c) 12 to 20 C.L./ac. of F.Y.M. at Sonask at Umpara. (ii) Medium black. (iii) N.A. (iv) Mid-late variety at Umpara; B.P.—53 at Sonask. (v) (a), (b) and (c) N.A. (d) Between rows 4'; between plants 1 ½'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 14.62°. (x) 15.1.1953.

2. TREATMENTS:

1. Control (no manure)
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

N as A/S-G.N.C. in 1:1 ratio and P<sub>2</sub>O<sub>5</sub> as Super.

3. DESIGN:

(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village two fields were selected. (iii) (a) 72'x30'. (b) 60'x18'. (iv) Yes.

4. GENERAL:

(i) Stunted growth. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 153.6 lb./ac.
(ii) 65.50 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>145.6</td>
</tr>
<tr>
<td>2.</td>
<td>117.7</td>
</tr>
<tr>
<td>3.</td>
<td>197.6</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>15.12 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Jowar (Kharif).
Centre: Palsana.
Ref: Gj. 52(241).
Type: 'M'.

Object: To study the response of Jowar to N applied singly and in combination with P<sub>2</sub>O<sub>5</sub>.

BASAL CONDITIONS:

(i) (a) N.A. (b) Cotton. (c) Nil. except at one site in Tundi where 5 C.L. of F.Y.M.<sub>high</sub> was applied. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local (mid-late). (v) (a), (b) and (c) N.A. (d) Between rows 3' to 5'; between plants—12". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 14.1.1953 to 22.1.1953.
2. TREATMENTS:
1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P₂O₅.
N as A/S+G N.C. in 1 : 1 ratio and P₂O₅ as Super.

3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) a) 72' x 30'. (b) 60' x 18'. (iv) Yes.

4. GENERAL:
(i) Stunted growth. (ii) Nil. (iii) Grain and straw yield. (iv) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 669.60 lb./ac.
(ii) 83.48 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av yield or grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>564.0</td>
</tr>
<tr>
<td>2.</td>
<td>689.2</td>
</tr>
<tr>
<td>3.</td>
<td>755.5</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>41.74 lb./ac.</td>
</tr>
</tbody>
</table>

Crop :- Jowar (Kharif).
Centre :- Songadh.
Object :- To study the response of Jowar to N applied singly and in combination with P₂O₅.

Ref :- Gj. 52(242).
Type :- 'M'.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Jowar. (c) Nil. (d) Loamy. (ii) No basal manure except at one site with 3 C.L./ac. of F.Y.M. (v) Local (late). (vi) (a) to (c) N.A. (d) Between rows 21' and between plants-9'. (vii) N.A. (viii) Unirrigated. (ix) N.A. (ix) 39.27'. (x) 18 to 19.12.1952.

2. TREATMENTS:
1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P₂O₅.
N as A/S+G N.C. in 1 : 1 ratio, P₂O₅ as Super.

3. DESIGN:
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) a) 72' x 30'. (b) 60' x 18'. (vi) Yes.

4. GENERAL:
(i) Stunted growth. (ii) Attack of black rust. (iii) Grain and fodder yield. (iv) N.A. (v) N.A. (vi) Nil. (vii) In village Bedra, only one trial was conducted.

5. RESULTS:
(i) 60.83 lb./ac.
(ii) 39.12 lb./ac.
(iii) Treatments do not differ significantly.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>78.22</td>
</tr>
<tr>
<td>2.</td>
<td>103.35</td>
</tr>
<tr>
<td>3.</td>
<td>94.08</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>22.59 lb./ac.</td>
</tr>
</tbody>
</table>
Crop : Jowar (Kharif).
Centre : Valod.

Object :- To study the response of Jowar to N applied singly and in combination with P$_2$O$_5$.

1. BASAL CONDITIONS :
(i) (a) N.A. (b) Cotton. (c) No manure. (ii) Medium black. (iii) 5 to 8 C.L./ac. of F.Y.M. (v) Local (late). (v) (a) to (c) N.A. (d) Between rows—3' and between plants—1.5'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 37.57'. (x) 14 to 18.1.1953.

2. TREATMENTS :
1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P$_2$O$_5$.
N as A/S+G.N.C. in 1 : 1 ratio and P$_2$O$_5$ at Super.

3. DESIGN :
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (ii) (a) 72' x 30'. (b) 60' x 18'. (iv) N.A.

4. GENERAL :
(i) Stunted growth. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :
(i) 221.8 lb./ac.
(ii) 217.8 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>262.1</td>
</tr>
<tr>
<td>2.</td>
<td>211.7</td>
</tr>
<tr>
<td>3.</td>
<td>191.6</td>
</tr>
</tbody>
</table>

S.E./mean = 15.40 lb./ac.

Crop : Jowar (Kharif).
Centre : Vyara.

Object :- To study the response of Jowar to N applied singly in combination with P$_2$O$_5$.

1. BASAL CONDITIONS :
(i) (a) N.A. (b) Cotton. (c) No manure. (ii) Medium black soil. (iii) 5 C.L./ac. of F.Y.M. (iv) Local from (v) (a) to (c) N.A. (d) Between rows—2'—6' and between plants—1'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 18, 19.12.1952.

2. TREATMENTS :
1. Control (no manure).
2. 60 lb./ac. of N.
3. 63 lb./ac. of N+20 lb./ac. of P$_2$O$_5$.
N applied as a mixture of G.N.C. and A/S and P$_2$O$_5$ as Super.

3. DESIGN :
(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) (a) 72' x 30'. (b) 60' x 18'. (iv) Yes.

4. GENERAL :
(i) Stunted growth. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.
5. RESULTS:

(i) 186.5 lb./ac.
(ii) 17.34 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>143.6</td>
</tr>
<tr>
<td>2</td>
<td>196.5</td>
</tr>
<tr>
<td>3</td>
<td>219.2</td>
</tr>
</tbody>
</table>

S.E./mean = 8.67 lb./ac.

Crop: Jowar (Rahi).
Object: To find out the optimum spacing and seed rate for Jowar.

1. BASAL CONDITIONS:

(i) (a) Fallow—Wheat—Jowar, (b) Fallow, (c) Nil, (d) (a) back soil, (b) N.A. (iii) 9, 10, 1952.
(iv) (a) N.A., (b) Drilling, (c) and (d) As per treatments, (e) N.A. (v) Nil, (vi) No 8 (medium). (vii) Unirrigated. (viii) Gap filling on 24, 25.9.1952; interculturing on 7, 21, 10, 1952 and 2.11, 1952 and weeding on 21.10.1952. (ix) 0.27": (x) 9 to 11.2.1953.

2. TREATMENTS:

Main-plot treatments:
3 spacings between rows: \( S_1 = 2' \), \( S_2 = 3' \) and \( S_3 = 2' \) and 3' alternate spacing.

Sub-plot treatments:
3 seed rates: \( R_1 = 6 \), \( R_2 = 8 \) and \( R_3 = 10 \) lb./ac.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) \( 27' \times 38' \) for 2', \( 27' \times 42' \) for 3' and \( 27' \times 40' \) for 2' and 3' alternate spacings respectively (v) Two rows on either side and 5' at each end (vi) Yes.

4. GENERAL:

(i) The general growth was quite normal. However, grains did not develop fully for want of sufficient moisture in the soil. (ii) Only a mild attack of grass hopper was observed in the beginning. (iii) Grain and chaff yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. vii) and viii) Nil.

5. RESULTS:

(i) 80.3 lb./ac.
(ii) (a) 19.6 lb./ac.
(b) 159.8 lb./ac.
(iii) Only R effect is highly significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>( S_1 )</th>
<th>( S_2 )</th>
<th>( S_3 )</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>( R_1 )</td>
<td>919</td>
<td>873</td>
<td>945</td>
<td>909</td>
</tr>
<tr>
<td>( R_2 )</td>
<td>823</td>
<td>875</td>
<td>814</td>
<td>838</td>
</tr>
<tr>
<td>( R_3 )</td>
<td>663</td>
<td>662</td>
<td>657</td>
<td>661</td>
</tr>
</tbody>
</table>

Mean | 816 | 787 | 825 | 833 |

S.E. of difference of two
1. S marginal means = 66.2 lb./ac.
2. R marginal means = 53.3 lb./ac.
3. R means at the same level of S = 92.3 lb./ac.
4. S means at the same level of R = 100.4 lb./ac.
Crop: Jowar (Rabi).

Object—To find out optimum spacing and seed-rate for Jowar.

1. BASAL CONDITIONS
   (i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 29.9.1953. (iv) (a) 6 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 10 C.L.ac. of F.Y.M. applied on 3.6.1953, by broadcasting. (vi) Rabi Jowar No. 8 (medium). (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 8.2.1954.

2. TREATMENTS
   Main-plot treatments:
   3 spacings between rows: \( S_1 = 2' \), \( S_2 = 3' \) and \( S_3 = 2' \) and 3' alternate spacing.
   Sub-plot treatments:
   3 seed rates: \( R_1 = 6 \), \( R_2 = 8 \) and \( R_3 = 10 \) Ib./ac.

3. DESIGN
   (i) Split-plot. (iii) (a) 3 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) For 2' spacing, 27'x38'; for 3' spacing 27'x42'; for 2' and 3' spacing 27'x40'. (b) 17'x30'. (v) N.A. (vi) Yes.

4. GENERAL:
   (i) Normal. (ii) Mild attack of grass hopper. (iii) Grain yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 820 lb./ac.
   (ii) (a) 3008 lb./ac.
   (b) 151.6 lb./ac.
   (iii) Only R effect is highly significant.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>( S_1 )</th>
<th>( S_2 )</th>
<th>( S_3 )</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>( R_1 )</td>
<td>807</td>
<td>1081</td>
<td>943</td>
<td>944</td>
</tr>
<tr>
<td>( R_2 )</td>
<td>731</td>
<td>701</td>
<td>749</td>
<td>727</td>
</tr>
<tr>
<td>( R_3 )</td>
<td>767</td>
<td>832</td>
<td>766</td>
<td>788</td>
</tr>
<tr>
<td>Mean</td>
<td>768</td>
<td>771</td>
<td>820</td>
<td>820</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. S marginal means = 100.6 lb./ac.
2. R marginal means = 50.7 lb./ac.
3. R means at the same level of S = 87.2 lb./ac.
4. S means at the same level of R = 123.2 lb./ac.
2. TREATMENTS:
   1. No *Lang* between *Jowar* strips (*Laria* system).
   2. *Lang* grown between *Jowar* strips (*Laria* system).

3. DESIGN:
   (i) R.B.D. (ii) 2. (b) N.A. (iii) 3. (iv) (a) 50 x 46.5'. (b) 46' x 18'. (v) N.A. (vi) Yes.

4. GENERAL:

5. RESULTS:
   (i) 1187 lb/ac.
   (ii) 169.1 lb/ac.
   (iii) Treatments differ highly significantly.
   (iv) Av. yield of *Jowar* grain in lb/ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1773</td>
</tr>
<tr>
<td>2.</td>
<td>2193</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>84.53 lb/ac.</td>
</tr>
</tbody>
</table>

Crop: *Jowar* (*Kharij*).

Object: To find out optimum spacing and seed rate for *Jowar*.

1. BASAL CONDITIONS:
   (i) (a) Cotton-*Jowar*-Cotton. (b) Cotton. (c) 5 C.L. i.e. of F.Y.M. (ii) (a) Alluvial, medium black. (b) Refer soil analysis, Viramgam. (iii) 21.7.1950. (iv) (a) No ploughings but 3 to 4 harrowings. (b) Drilling. (c) As per treatments. (d) As per treatments. (e) NA. (f) NA. (g) C-62 (fodder crop, mid-meal). (vii) Unirrigated. (viii) One weeding on 13.8.1950; 2 interculturings on 15.8.1950 and 29.8.1950. (ix) 24.37° x 12.10.1950.

2. TREATMENTS:
   Main-plot treatments:
   3 spacings between rows: $S_1 = 12''$, $S_2 = 15''$ and $S_3 = 18''$.
   Sub-plot treatments:
   4 seed rates: $R_1 = 5$, $R_2 = 10$, $R_3 = 15$ and $R_4 = 10$ lb/ac.

3. DESIGN:
   (i) Split-plot. (ii) (a) 3 main-plots/block; 4 sub-plots/main-plot. (b) 114' X 64.5'. (iii) 6. (iv) (a) Sub-plot size: 36' x 21' for 12'' and 15'' spacing and 36' x 21.5' for 18'' spacing, main-plot size: 144' x 21' for 12'' and 18'' spacing and 144' x 22.5' for 15'' spacing. (b) Sub-plot: 30' x 15'. (v) 3' all round the net plot for 12'' and 18'' spacing and for the plot with 15'' spacing, 3 rows on either side and 3' row at both the ends of net plot. (vi) Yes.

4. GENERAL:
   (i) Germination and the general growth of the crop is fairly good. (ii) Nil. (iii) Weight of grain and fodder. (iv) (a) 1950-I. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) *Jowar* crop was a fodder crop and the yield data for fodder was also analysed.

5. RESULTS:
   (i) 679 lb/ac.
   (ii) (a) 12.25 lb/ac.
   (b) 139.6 lb/ac.
   (i) Only R effect is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>R₁</th>
<th>R₂</th>
<th>R₃</th>
<th>R₄</th>
<th>Mean</th>
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<tr>
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<td>785</td>
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<td>617</td>
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<td>731</td>
<td>729</td>
<td>676</td>
<td>597</td>
<td>683</td>
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<tr>
<td>S₃</td>
<td>813</td>
<td>650</td>
<td>647</td>
<td>543</td>
<td>663</td>
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<tr>
<td>Mean</td>
<td>729</td>
<td>721</td>
<td>620</td>
<td>586</td>
<td>679</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. S marginal means = 35.4 lb./ac.
2. R marginal means = 46.5 lb./ac.
3. R means at the same level of S = 10.6 lb./ac.
4. S means at the same level of R = 78.0 lb./ac.

Crop: Jowar (Kharif).
Object: To find out the optimum spacing and seed-rate for Jowar.

1. BASAL CONDITIONS:
   (i) (a) Cotton-Jowar-Cotton. (b) Cotton. (c) Nil. (ii) (a) Alluvial, medium black. (b) Refer soil analysis. Viramgam. (iii) 4.8.1951. (iv) (a) No ploughing, 3 to 4 harrowings. (b) Drilling. (c) As per treatments. (d) As per treatments. (e) N.A. (v) Nil. (vi) C-10-2 (fodder crop, mid-late). (vii) Unirrigated. (viii) One weeding and interculturing on 1.9.1951. (ix) 9.71'. (x) 15.10.1951.

2. TREATMENTS:
   Main-plot treatments:
   3 spacings between rows; S₁ = 12', S₂ = 15' and S₃ = 18'.
   Sub-plot treatments:
   4 seed rates: R₁ = 5, R₂ = 10, R₃ = 15 and R₄ = 20 lb./ac.

3. DESIGN:
   (i) Split-plot. (ii) (a) 3 main-plots/block; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 36' x 21' for 12' and 18' spacing; 36' x 22.5' for 15' spacing. (b) 30'. (v) 3' round the net plot for 12' and 18' spacing. 3 rows on either side and 3' of rows at both ends for 15' spacing. (vi) Yes.

4. GENERAL:
   (i) The monsoon started about a month later. The general growth of the crop was below normal on account of scarcity of rains. There was no grain formation and hence the crop was a total failure. (ii) Nil. (iii) Weight of fodder. (iv) (a) 1950-1951. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Jowar crop was a fodder crop. As there was no grain formation, the yield data for fodder was analyzed and presented in results.

5. RESULTS:
   (i) 2253 lb./ac.
   (ii) 500.3 lb./ac.
   (b) 417.5 lb./ac.
   (iii) Only R effect is highly significant.
   (iv) Av. yield of fodder in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>R₁</th>
<th>R₂</th>
<th>R₃</th>
<th>R₄</th>
<th>Mean</th>
</tr>
</thead>
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<td>2291</td>
<td>2307</td>
<td>2452</td>
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<td>S₂</td>
<td>1807</td>
<td>2288</td>
<td>2243</td>
<td>2097</td>
<td>2134</td>
</tr>
<tr>
<td>S₃</td>
<td>1710</td>
<td>2452</td>
<td>2904</td>
<td>2355</td>
<td>2255</td>
</tr>
<tr>
<td>Mean</td>
<td>1850</td>
<td>2377</td>
<td>2484</td>
<td>2301</td>
<td>2253</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. S marginal means = 144.8 lb./ac.
2. R marginal means = 139.2 lb./ac.
3. R means at the same level of S = 241.1 lb./ac.
4. S means at the same level of R = 252.4 lb./ac.
Object: To study the residual effect of cotton intercropped with Chinamug on the yield of succeeding Jowar crop.

1. BASAL CONDITIONS:
   (i) (a) Cotton and Chinamug-Jowar. (b) Cotton and Chiramug. (c) As per treatments. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 24.1.1951. (iv) (a) Irrigation. (b) Drilling. (c) 10 lb./ac. (d) 1 x 1'. (e) Nil. (f) B.P. 15 late. (g) Unirrigated. (h) 3 thinning and 2 intercultivings. (ix) 45.42'. (x) 4.2.1950.

2. TREATMENTS:
   1. Cotton alone to be followed by kharif Jowar.
   2. Cotton with inter cropping of chinamug to be followed by kharif Jowar.
   3. Cotton with inter cropping of chinamug with 50 lb./ac of P04 to be followed by kharif Jowar.

3. DESIGN:
   (i) R.B.D. (ii) 3. (b) N.A. (iii) 8. (iv) 12'. (v) 6' ring around. (vi) Yes.

4. GENERAL:
   (i) Normal. (ii) Slight attack of Stem-borer. (iii) Grain and fodder yield. (iv) (a) 1948-1951 (Residual effect from 1949-1950). (v) Yes. (Two different plots for the experiment were kept. Hence the treatments were being administered to the same plots in every alternate year). (vi) Nil. (vii) and (b) N.A. (vii) 1 and (vii) Nil.

5. RESULTS:
   (i) 1273 lb./ac.
   (ii) 84.37 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.
   Treatment   Av. yield
   1.       1293
   2.       1225
   3.       1308
   8 L/mean = 29.83 lb./ac.

Crop: Jowar (Kharif).
Obj.: To study the residual effect of cotton intercropped with chinamug on the yield of succeeding Jowar crop.

1. BASAL CONDITIONS:
   (i) (a) Cotton and chinamug-Jowar. (b) Cotton and Chiramug. (c) As per treatments. (d) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 14.4.1950. (iv) (a) N. (b) B.P. 5 late. (c) Drilling. (d) 3 x 1'. (e) Nil. (f) B.P. 5 late. (ii) 3 intercultivings and 1 thinning. (iii) 29.49'. (iv) 24.1.1951.

2. TREATMENTS:
   1. Cotton only to be followed by kharif Jowar.
   2. Cotton with inter cropping of chinamug to be followed by kharif Jowar.
   3. Cotton with inter cropping of chinamug with 50 lb./ac of P04 to be followed by kharif Jowar.

3. DESIGN:
   (i) R.B.D. (ii) 3. (b) N.A. (iii) 8. (iv) (a) 16' x 62'. (v) 21' x 50'. (vi) 6' ring around. (vi) Yes.

4. GENERAL:
   (i) Normal. (ii) Attack of Stem-borer. (iii) Grain and fodder yield. (iv) (a) 1948-1951 (Residual effect from 1949-1950). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:
   (i) 698 lb./ac.
   (ii) 59.97 lb./ac.
   (iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>945</td>
</tr>
<tr>
<td>2.</td>
<td>921</td>
</tr>
<tr>
<td>3.</td>
<td>949</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>21.21 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Jowar (Kharif).

Object: To study the residual effect of Cotton intercropped with Chinamug on the yield of succeeding Jowar crop.

1. BASAL CONDITIONS:

(i) (a) Cotton and Chinamug— Jowar. (b) Cotton and Chinamug. (c) As per treatments. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.7.1951. (iv) (a) 3 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3' x 1'. (e) —. (vi) Nil. (vii) B.F.—33 (late). (viii) 1 weeding, 1 thinning and 3 interculturings. (ix) 23.22°. (x) 16.2.1952.

2. TREATMENTS:

1. Cotton only to be followed by kharif Jowar.
2. Cotton with intercropping of chinamug to be followed by kharif Jowar.
3. Cotton with intercropping of chinamug with 50 lb./ac. of P₂O₅ to chinamug to be followed by kharif Jowar.

5 C.L./ac. of F.Y.M. applied to Cotton.

3. DESIGN:

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36' x 62'. (b) 24' x 50'. (v) 6' ring around. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Heavy attack of stem borer. (iii) Grain and fodder yield. (iv) (a) 1948—1951 (residual effect from 1949-50). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 937 lb./ac.
(ii) 115.4 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>994</td>
</tr>
<tr>
<td>2.</td>
<td>885</td>
</tr>
<tr>
<td>3.</td>
<td>932</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>40.8 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Jowar (Rabi).

Object: To see the effect of seeds treated with 2-4-D solutions with different conditions on growth and yield of Jowar.

1. BASAL CONDITIONS:

2. TREATMENTS:

1. Seed soaked in water for 30 minutes.
2. Seed soaked in solution of 2,4-D of concentration 0.01 P.P.M. for 30 minutes.
3. Seed soaked in solution of 2,4-D of concentration 1.0 P.P.M. for 30 minutes.
4. Seed soaked in solution of 2,4-D of concentration 10.0 P.P.M. for 30 minutes.
5. Seed soaked in water for 5 hours.
6. Seed soaked in solution of 2,4-D of concentration 0.01 P.P.M. for 5 hours.
7. Seed soaked in solution of 2,4-D of concentration 10.0 P.P.M. for 5 hours.
8. Control.

3. DESIGN:

(i) R.B.D. (ii) 8. (a) N.A. (iii) 8. (b) N.A. (iv) 8. (a) 42'. (b) 36'. (c) 2'. (v) 5 ring round the net plot.
(vi) Yes.

4. GENERA L:

(i) In replications II and III, the growth was poor. In the II and III replications the crop was heavily attacked by grass hopper during germination time hence the growth was poor. (ii) Grain and fodder yield
(iv) a) 1952—1954. (b) No. (c) N.A. (v) a) N.A. (b) N.A. (vi) N.A.

5. RESULTS:

(i) 572 lb./ac.
(ii) 161.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>586</td>
</tr>
<tr>
<td>2.</td>
<td>624</td>
</tr>
<tr>
<td>3.</td>
<td>521</td>
</tr>
<tr>
<td>4.</td>
<td>472</td>
</tr>
<tr>
<td>5.</td>
<td>567</td>
</tr>
<tr>
<td>6.</td>
<td>611</td>
</tr>
<tr>
<td>7.</td>
<td>454</td>
</tr>
<tr>
<td>8.</td>
<td>731</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>84.8</td>
</tr>
</tbody>
</table>

Crop :—Jowar ('Kharif').
Site :—Agri. Res. Sta., Surat.

Object :—To see the effect of the seeds treated with hormones on the growth and yield of Jowar.

1. BASAL CONDITIONS:

(i) (a) Cotton—Jowar. (b) Cotton (Stayig). (c) N.A. (d) Black cotton seed. (e) Reset soil analyses: Surat. (ii) 9.3.1952. (iii) (a) N.A. (b) Drilling: 8 to 11 in. (c) Distance between rows: 3'.
(e)— (v) N.A. (vi) B.P.—53. (vii) Unirrigated. (viii) One thinning, two weedings and 4 or intercultrings. (ix) 19.98'. (x) 20.1.951.

2. TREATMENTS:

1. Seeds soaked in water for 30 minutes.
2. Seeds soaked in water for 5 hours.
3. Seeds soaked in solution of 2,4-D in 0.1 concentration for 30 minutes.
4. Seeds soaked in solution of 2,4-D in 0.1 concentration for 5 hours.
5. Seeds soaked in solution of 2,4-D in 1.0 concentration for 5 minutes.
6. Seeds soaked in solution of 2,4-D in 1.0 concentration for 5 minutes.
7. Seeds soaked in solution of 2,4-D in 10.0 concentration for 5 minutes.
8. Seeds soaked in solution of 2,4-D in 10.0 concentration for 5 minutes.
9. Seeds soaked in solution of I.A.A in 1.0 concentration for 5 minutes.
10. Seeds soaked in solution of I.A.A in 1.0 concentration for 5 minutes.
11. Seeds soaked in solution of I.A.A in 10.0 concentration for 5 minutes.
12. Seeds soaked in solution of I.A.A in 10.0 concentration for 5 minutes.
13. Seeds soaked in solution of I.A.A in 100.0 concentration for 30 minutes.
14. Seeds soaked in solution of I.A.A in 100.0 concentration for 30 minutes.
15. Control.
3. DESIGN:
(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 42' x 18'. (b) 36' x 12'. (v) 3' ring all round the net plot. (vi) Yes.

4. GENERAL:
(i) Good germination and good growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1952—1954, (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 896 lb./ac. (ii) 108.1 lb./ac. (iii) Treatments do not differ significantly.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
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<td>9.</td>
<td>949</td>
</tr>
<tr>
<td>2.</td>
<td>750</td>
<td>10.</td>
<td>942</td>
</tr>
<tr>
<td>3.</td>
<td>892</td>
<td>11.</td>
<td>838</td>
</tr>
<tr>
<td>4.</td>
<td>854</td>
<td>12.</td>
<td>914</td>
</tr>
<tr>
<td>5.</td>
<td>958</td>
<td>13.</td>
<td>952</td>
</tr>
<tr>
<td>6.</td>
<td>907</td>
<td>14.</td>
<td>870</td>
</tr>
<tr>
<td>7.</td>
<td>907</td>
<td>15.</td>
<td>949</td>
</tr>
<tr>
<td>8.</td>
<td>873</td>
<td></td>
<td></td>
</tr>
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</table>

S.E./mean = 54.1 lb./ac.

Crop : Jowar (Kharif).

Ref : Gj. 53(42).
Type : 'D'.

Object : To study the effect of seeds treated with hormones on the growth and yield of Jowar.

1. BASAL CONDITIONS:
(i) (a) Jowar—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 13.3.1953 and resown on 25.8.1953. (iv) (a) 2—3 harrowings. (b) Drilled, by hand plough. (c) 10 lb./ac. (d) 3' distance and thinned out keeping 1' distance between plants. (e) —. (v) Nil. (vii) Budh perio—53 (improved, late). (viii) Unirrigated. (vii) 2 weedings; 2 thinnings and 5 inter-cultivations. (ix) 58'. (x) 13.2.1954.

2. TREATMENTS:
1. Seeds soaked in water for 30 minutes.
2. Seeds soaked in water for 5 hours.
3. Seeds soaked in solution of 2-4-D in 0.1 concentration for 30 minutes.
4. Seeds soaked in solution of 2-4-D in 0.1 concentration for 5 hours.
5. Seeds soaked in solution of 2-4-D in 1.0 concentration for 30 minutes.
6. Seeds soaked in solution of 2-4-D in 1.0 concentration for 5 hours.
7. Seeds soaked in solution of 2-4-D in 10.0 concentration for 30 minutes.
8. Seeds soaked in solution of 2-4-D in 10.0 concentration for 5 hours.
9. Seeds soaked in solution of I.A.A. in 1.0 concentration for 30 minutes.
10. Seeds soaked in solution of I.A.A. in 1.0 concentration for 5 hours.
11. Seeds soaked in solution of I.A.A. in 10.0 concentration for 30 minutes.
12. Seeds soaked in solution of I.A.A. in 10.0 concentration for 5 hours.
13. Seeds soaked in solution of I.A.A. in 100.0 concentration for 30 minutes.
14. Seeds soaked in solution of I.A.A. in 100.0 concentration for 5 hours.
15. Control.

3. DESIGN:
(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 42' x 18'. (b) 36' x 12'. (v) 3' ring round the net plot. (vi) Yes.

4. GENERAL:
(i) Germination was satisfactory. Jowar growth was checked due to heavy attack of stem-borer. Many shoots were sprouted but the earing was not satisfactory, which may be due to lack of moisture in later part of the season. (ii) There was about 80% attack of stem-borer to Jowar. No control measures taken. (iii) Periodical height, and weight of Kadbi were taken. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Out of 58" of rain against an average of 42" and 46" occurred in July and August respectively. (vi) Nil.
5. RESULTS:
   (i) 805 lb/ac.
   (ii) 139.2 lb/ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb/ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>781</td>
<td>2.</td>
<td>718</td>
</tr>
<tr>
<td>3.</td>
<td>766</td>
<td>4.</td>
<td>895</td>
</tr>
<tr>
<td>5.</td>
<td>848</td>
<td>6.</td>
<td>863</td>
</tr>
<tr>
<td>7.</td>
<td>778</td>
<td>8.</td>
<td>837</td>
</tr>
</tbody>
</table>

S.E./mean = 62.6 lb/ac.

Crop :- Bajra (Kharif).
Object :- To study the N and P2O5 requirements of Bajra with a basal dose of F.Y.M.

1. BASAL CONDITIONS:
   (i) (a) Bajra-Groundnut-Wheat-Cotton. (b) Lucerne and Vegetables. (c) 24 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 3.7.1951. (iv) (a) N.A. (b) Drilling. (c) 5 lb/ac. (d) 18' between rows. (e) N.A. (f) 5 C.L./ac. of F.Y.M. on 27.6.1951. (vi) Bajra - IV. (vii) Unirrigated. (viii) 2 intercultivations 1 weeding and 2 thinnings. (ix) 9.90'. (x) 33 and 24.10.1951.

2. TREATMENTS:
   All combinations of (1) and (2).
   (1) 4 levels of N : N0 = 0, N1 = 15, N2 = 30 and N3 = 45 lb/ac.
   (2) 4 levels of P2O5 : P0 = 0, P1 = 15, P2 = 30 and P3 = 45 lb/ac.

3. DESIGN:
   (i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 21' x 22'. (b) 18' x 16'. (v) 1.5' x 3'. (vi) Yes.

4. GENERAL:
   (i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1951-1954. 'b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 627 lb/ac.
   (ii) 172.4 lb/ac.
   (iii) None of the effects is significant.
   (iv) Av. yield of grain in lb/ac.

<table>
<thead>
<tr>
<th>N0</th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>681</td>
<td>770</td>
<td>580</td>
<td>601</td>
<td>658</td>
</tr>
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<td>747</td>
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<td>502</td>
<td>618</td>
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<td>707</td>
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<td>591</td>
<td>593</td>
<td>658</td>
</tr>
<tr>
<td>562</td>
<td>542</td>
<td>689</td>
<td>500</td>
<td>573</td>
</tr>
</tbody>
</table>

Mean | 674 | 664 | 620 | 549 | 627 |

S.E. of any marginal mean = 4.1 lb/ac.
S.E. of body of table = 86.2 lb/ac.
Crop :- Bajra (Kharif).

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of Bajra (with a basal dose of F.Y.M.).

1. BASAL CONDITIONS :
(i) (a) Bajra-Groundnut (Kharif) and Wheat (Rabi)-Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 28.6.1952. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) Between rows—18'; between plants—irregular. (e) —. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) Bajra-E.M S. (local); (early; mass selection). (vii) Unirrigated. (viii) One thinning on 23.7.1952; 1 weeding and 2 interculterings and gap filling. (ix) 11.71'. (x) 24 to 27.10.1952.

2. TREATMENTS:
All combinations of (1) and (2)
(1) 4 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=15, N<sub>2</sub>=30 and N<sub>3</sub>=45 lb./ac.
(2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=15, P<sub>2</sub>=30 and P<sub>3</sub>=45 lb./ac.

3. DESIGN:
(i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 39' x 21'. (b) 30' x 12'. (v) Yes.

4. GENERAL:
(i) The germination was quite satisfactory and the growth was even. At the harvesting time, practically half of the plants had fallen down on account of wind. Yield was quite satisfactory. (ii) Continuous cloudy weather lead to an intense growth of insects, exact nature of insects and pests not specified. (iii) Grain yield. (iv) (a) 1951—1954. (b) No. (c) N.A. (v) (a) Baroda. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 344 lb./ac.
(ii) 101.6 lb./ac.
(iii) Only main effect of P is highly significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N&lt;sub&gt;0&lt;/sub&gt;</th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
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<td>P&lt;sub&gt;1&lt;/sub&gt;</td>
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<td>384</td>
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<tr>
<td>P&lt;sub&gt;3&lt;/sub&gt;</td>
<td>389</td>
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<td>348</td>
<td>358</td>
<td>342</td>
<td>331</td>
<td>344</td>
</tr>
</tbody>
</table>

S.E. of any marginal mean =25.9 lb./ac.
S.E. of body of table =51.8 lb./ac.

Crop :- Bajra (Kharif).

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of Bajra (with a basal dose of F.Y.M.).

1. BASAL CONDITIONS :
(i) (a) Bajra-Groundnut (Kharif) and Wheat (Rabi)—cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 26.6.1953. (iv) (a) 3 harrowings. (b) Drilling. (c) 5 lb./ac. (d) 18'. (e) —. (v) 5 C.L./ac. of F.Y.M. in the month of May. (vi) Mass selected Bajra. (vii) Unirrigated. (viii) Weeding and intercultering thrice. (ix) 34.25'. (x) 25.10.1953.
2. TREATMENTS:

All combinations of (1) and (2)
(1) 4 levels of N: N₀ = 0, N₁ = 15, N₂ = 30 and N₃ = 45 lb./ac.
(2) 4 levels of P₂O₅: P₀ = 0, P₁ = 15, P₂ = 30 and P₃ = 45 lb./ac.
N as A/S broadcast in single dose. P₂O₅ as Super drilled in furrows.

3. DESIGN:

(i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 59' x 31'. (b) 33' x 15'. (v) 3' all round the net plot. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951-·1954. (b) No. (c) N.A. (v) Baroda. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1516 lb./ac.
(ii) 184.8 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>N₃</th>
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<td>1652</td>
<td>1328</td>
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<td>1478</td>
<td>1581</td>
<td>1603</td>
<td>1667</td>
<td>1512</td>
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</tbody>
</table>

Mean 1507 1525 1565 1479 1516

S.E. of any marginal mean = 46.2 lb./ac.
S.E. of body of table = 92.4 lb./ac.

Crop :- Bajra (Kharif).

Ref :-Gj. 48(65).
Type :-'M'.

Object :-To study the effect of Super applied to crops (Groundnut, Udd and Bajra) on the succeeding crop Cotton.

1. BASAL CONDITIONS:

(i) (x) No. (b) N.A. (c) N.A. (d) (a) Medium black. (b) Refer soil analysis, Amreli. (vii) 1 to 2 ploughings and 3 harrowings. (b) Drilling. (c) 3 C.I. ac. (d) Between rows—36'; between plants irregular. (e) N.A. (f) Nil. (g) Bajra (local). (h) Unirrigated. (i) 1 to 2 weedings and 2 to 3 intercultivations. (ix) 12.73'. (x) N.A.

2. TREATMENTS

1. Bajra without Super.
2. Bajra with Super applied at 30 lb./ac. of P₂O₅.

3. DESIGN:

(i) R.B.D. (vi) (a) 2. (b) N.A. (iii) 4. (iv) (a) 44' x 30'. (b) 40' x 24'. (v) 2' x 3'. (vi) Yes.

4. GENERAL:

(i) The crop germinated well. For want of rains, withering was noticed. (ii) Nil. (ii) Grain yield. (iv) (a) 1946-1949. (b) No. (c) N.A. (v) (a) N.C. (b) N.A. (vi) Nil. (vii) Raw data N.A. Groundnut and Udd crops are given separately.

5. RESULTS:

(i) 1205 lb./ac.
(ii) N.A.
(iii) N.A.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1168</td>
<td>=N.A.</td>
</tr>
<tr>
<td>2.</td>
<td>1242</td>
<td></td>
</tr>
</tbody>
</table>

Crop : Bajra (Kharij).

Ref : Gj. 49(82). Type : 'M'.

Object : To study the effect of Super applied to the crops (Groundnut, Udid and Bajra) on the succeeding crop Cotton.

1. BASAL CONDITIONS :
(i) (a) Nil. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli.
(iii) 19.7.1949. (iv) (a) 1 ploughing and 3 harrowings. (b) Drilling. (c) 5 lb./ac. (d) Between rows—36" between plants—irregular. (e) N.A. (v) Nil. (vi) Bajra (Local). (vii) Unirrigated. (viii) 4 weedings and 3 interculturings. (ix) 13.75°. (x) 26.11.1949.; 27.12.1949.

2. TREATMENTS:
1. Bajra without Super.
2. Bajra with Super applied at 30 lb./ac. of P₂O₅.

3. DESIGN :
(i) R.B.D. (ii) 2. (b) N.A. (iii) 4. (iv) (a) 44' × 30'. (b) 40' × 24'. (v) 2' × 3'. (vi) Yes.

4. GENERAL:
(i) Due to insufficient rains in the month of August, the tillering in Bajra was affected. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Groundnut and Udid crops are given separately.

5. RESULTS:
(i) 1135 lb./ac.
(ii) 45.38 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1112</td>
</tr>
<tr>
<td>2.</td>
<td>1157</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=22.69 lb./ac.</td>
</tr>
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</table>

Crop : Bajra (Kharij).

Ref : Gj. 50(69). Type : 'M'.

Object : To find out the N and P₂O₅ requirements of Bajra (with a basal dose of F.Y.M.).

1. BASAL CONDITIONS:
(i) (a) N.A. (b) N.A. (c) N.A. (d) Sandy loam. (b) Refer soil analysis, Baroda. (iii) 4.8.1950. (iv) (a) 1 harrowing. (b) N.A. (c) 8 lb./ac. (d) Between rows—18°. (e) —. (v) 10 C.L./ac. of F.Y.M. (vi) B-207. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS:
All combinations of (1) and (2)
(1) 4 levels of N : N₀ = 0, N₁ = 20, N₂ = 40 and N₃ = 60 lb./ac.
(2) 4 levels of P₂O₅ : P₀ = 0, P₁ = 20, P₂ = 40 and P₃ = 60 lb./ac.

Other details N.A.
3. DESIGN:
(i) 4x4 Fact. in R.B.D. (ii) (a) 16'. (b) 160"x12'. (iii) (a) 40'x30'. (b) 30'x15'. (v) 5 rows on either side and 5' of row at each end of net plot. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) N.A. (c) (a) No. (b) No. (v) and (vi) Nil.

5. RESULTS:
(i) 1028 lb./ac.
(ii) 135.5 lb./ac.
(iii) Only main effect of N is highly significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>N_0</th>
<th>N_1</th>
<th>N_2</th>
<th>N_3</th>
<th>Mean</th>
</tr>
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<td>912</td>
<td>1091</td>
<td>1270</td>
<td>1013</td>
</tr>
<tr>
<td>796</td>
<td>983</td>
<td>1132</td>
<td>1247</td>
<td>1039</td>
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<tr>
<td>832</td>
<td>960</td>
<td>1176</td>
<td>1126</td>
<td>1008</td>
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<tr>
<td>847</td>
<td>564</td>
<td>1124</td>
<td>1269</td>
<td>1032</td>
</tr>
</tbody>
</table>

| Mean | 814 | 941 | 1 31 | 1228 | 1028 |

S.E. of any marginal mean = 38.9 lb./ac.
S.E. of body of table = 67.8 lb./ac.

Crop : Bajra ('Kharrif').
Ref : Gj. 52(107).

Object :- To find out the N and P_2O_5 requirements of Bajra with a basal dose of F.Y.M.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Kodra. (c) 160 lb./ac. of G.N.C. (ii) (a) Sandy loam. (b) Refer soil analysis, Baroda.

2. TREATMENTS:
(i) All combinations of (1) and (2).
(ii) 4 levels of N : N_0 = 0, N_1 = 20, N_2 = 40 and N_3 = 60 lb./ac.
(iii) 4 levels of P_2O_5 : P_0 = 0, P_1 = 20, P_2 = 40 and P_3 = 60 lb./ac.
Other details N.A.

3. DESIGN:
(i) 4x4 Fact. in R.B.D. (ii) (a) 16'. (b) 168"x128'. (iii) 4'. (v) (a) 42'x27'. (b) 3'x15'. (v) 6' all round net plot. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) N.A. (c) (a) No. (b) N.A. (vii) The experiment failed in 1951.

5. RESULTS:
(i) 1298 lb./ac.
(ii) 271.8 lb./ac.
(iii) Only main effect of N is highly significant.
(iv) Avg. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>N₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
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<td>1239</td>
<td>1222</td>
<td>1573</td>
<td>1301</td>
</tr>
<tr>
<td>P₁</td>
<td>1174</td>
<td>1077</td>
<td>1301</td>
<td>1482</td>
<td>1259</td>
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<tr>
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<td>1271</td>
<td>1467</td>
<td>1716</td>
<td>1336</td>
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<tr>
<td>P₃</td>
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<td>1398</td>
<td>1216</td>
<td>1497</td>
<td>1296</td>
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</table>

Mean 1060 1259 1302 1302 1298

S.E. of any marginal mean = 67.9 lb./ac.
S.E. of body of table = 135.9 lb./ac.

Crop: Bajra (Kharif).

Object: To study the effect of P₂O₅ on the yield of Bajra.

1. BASAL CONDITIONS:
   (i) (a) Bajra-Wheat-Cotton. (b) N.A. (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 33.46°. (x) N.A.

2. TREATMENTS:
   1. Bajra unmanured.
   2. Bajra manured with 50 lb./ac. of P₂O₅ as Super at sowing.

3. DESIGN:
   (i) Paired-plot. (ii) (a) 2. (b) 42' x 36'. (iii) 2. (iv) (a) 42' x 18'. (b) 30' x 15'. (v) 6' x 1.5'. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 735 lb./ac.
   (ii) 242.0 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Avg. yield of grain in lb./ac,
   
   Treatment | Av. yield | S.E./mean
   ---------|-----------|-----------
   1.      | 690       | ±171.1 lb./ac.
   2.      | 779       |           

Crop: Bajra (Kharif).

Object: To find out the economic and suitable combination of seed rate and spacing for maximum yield.

1. BASAL CONDITIONS:
   (i) (a) Bajra—Groundnut (Kharif) and Wheat (Rabi)—Cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (d) Medium black. (e) Refer soil analysis, Amreli. (v) 25.6.1953. (iv) (a) 3 harrowings. (b) Sowing by hand in furrows opened by axe. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. in the month of May (vi) Mass selected Bajra. (vii) Unirrigated. (viii) 3 weedings and 3 interculturings. (ix) 31.25°. (x) 23.10.1953.
2. TREATMENTS:

Main-plot treatments:
4 spacings: \( S_1 = 18' \), \( S_2 = 24' \), \( S_3 = 30' \) and \( S_4 = 36' \).

Sub-plot treatments:
4 seed rates: \( R_1 = 5 \), \( R_2 = 10 \), \( R_3 = 15 \) and \( R_4 = 20 \) lb./ac.

3. DESIGN:

(i) Split-plot.  (ii) (a) 4 main-plots/block and 4 sub-plots/main-plot.  (b) N.A.  (iii) 4.  (iv) (a) \( 36' \times 19' \), \( 34' \times 19' \), \( 32' \times 19' \) and \( 36' \times 19' \) for \( 18', 24', 30' \) and \( 36' \) spacings respectively.  (b) \( 30' \times 15' \).  (c) and (d) as per treatments (e) N.A.  (v) 2 rows on either side of each plot for \( 18' \) spacing and one row on either side for \( 24', 30' \) and \( 36' \) spacings respectively.  (vi) Yes.

4. GENERAL:

(i) Pair.  (ii) Nil.  (iii) Grain and straw yield.  (iv) (a) 1952-1954.  (b) and (c) N.A.  (v) (a) and (b) N.A.  (vi) The growth of the plants and earheads was rather stunted in plots with single seed rate and spacings.  (vii) Nil.

5. RESULTS:

(i) 1209 lb./ac.  
(ii) (a) 382.3 lb./ac.  
(b) 171.9 lb./ac.  

(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>( S_1 )</th>
<th>( S_2 )</th>
<th>( S_3 )</th>
<th>( S_4 )</th>
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<td>1192</td>
</tr>
<tr>
<td>( R_3 )</td>
<td>1077</td>
<td>1398</td>
<td>1195</td>
<td>1331</td>
<td>1250</td>
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<tr>
<td>( R_4 )</td>
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<td>1264</td>
<td>1118</td>
<td>1259</td>
<td>1235</td>
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</table>

Mean 1123 1164 1220 12.0 12.9

S E. of difference of two

1. S marginal means 135.2 lb./ac.
2. R marginal means 61.5 lb./ac.
3. R means at the same level of S 123.0 lb./ac.
4. S means at the same level of R 172.1 lb./ac.

Crop :-Bajra (Kharif).
Site :-Agri. Res. Stn., Deesa.

Object :-To find out the suitable spacing and seed rate for getting maximum yield.

1. BASAL CONDITIONS:

(i) (a) and (b) N.A.  (c) Nil.  (ii) (a) N.A.  (b) Refer soil analysis, Deesa.  (iii) 25.6.1953.  (iv) (a) Ordinary tillage.  (b) Drilling.  (c) and (d) As per treatments.  (e) N.A.  (v) Nil.  (vi) Bajra—207.  (vii) Unirrigated.  (viii) Interculturing on 20.7.1953.  (ix) N.A.  (x) 22, 23.9.1953.
4. GENERAL:

(i) The germination was good and the growth was accelerated by timely rainfall followed by good tillering. After one month the crop was affected to a great extent by heavy and continuous rainfall. Hence less yield. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) Amrel. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1864 lb./ac.
(ii) (a) 346.6 lb./ac.
(b) 348.7 lb./ac.
(iii) Only R effect is highly significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
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<td>1968</td>
<td>2319</td>
<td>2036</td>
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<td>Mean</td>
<td>1753</td>
<td>1987</td>
<td>1834</td>
<td>1882</td>
<td>1864</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. S marginal means = 115.5 lb./ac.
2. R marginal means = 100.7 lb./ac.
3. R means at the same level of S = 201.3 lb./ac.
4. S means at the same level of R = 200.9 lb./ac.

Crop :- Maize. *(Kharif).*
Site :- Agri. Res. Stn., Dohad
Ref. :- Gj 51(77)
Type :- 'M'.

Object :- To study the effect of the leguminous crop (Gram) grown with and without super on the succeeding cereal crop (Maize).

1. BASAL CONDITIONS:

(i) (a) Gram *Maize*. (b) Gram. (c) As per treatments. (ii) (a) Dark brown. (b) Refer soil analysis, Dohad. (iii) 16.6.1951. (iv) (a) N.A. (b) Drilling (c) 20 lb./ac. (d) 24"×12". (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 4 interculturings and one weeding. (ix) 17.49°. (x) 24, 25.9.1951.

2. TREATMENTS:

1. Control (no P2O5).
2. 50 lb./ac. of P2O5 as Super to Gram Crop.
3. 100 lb./ac. of P2O5 as Super to Gram Crop.
4. 150 lb./ac. of P2O5 as Super to Gram Crop.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 50"×21"; (b) 30"×15". (v) 10"×3'. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Grain & fodder yield. (iv) (a) 1950—1951. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 9/6 lb./ac.
(ii) 208.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>947</td>
</tr>
<tr>
<td>2.</td>
<td>1775</td>
</tr>
<tr>
<td>3.</td>
<td>502</td>
</tr>
<tr>
<td>4.</td>
<td>132</td>
</tr>
<tr>
<td>5.</td>
<td>876</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>~ 85.2 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Gram (Rabi).
Object: To study the N, P and K requirements of Gram.

1. BASAL CONDITIONS:
   (i) (a) Gram-Jowar. (b) Jowar. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 17-10-1933. (iv) (a) 3 rows per plot. (b) N.A. (c) 20 lb./ac. (d) 12" row spacing (e) N.A. (v) 5 C.L./ac. of FYM on 14.10.1933. (vi) Chafer (medium). (vii) Uplifted. (viii) Weeding. (ix) Nil. (x) 15.2.1934.

2. TREATMENTS:
   \[ \begin{align*}
   0 & = \text{Control.} \\
   N & = 20 \text{ lb./ac. of N as A/S, and G.N.C. in 1:1 ratio.} \\
   P & = 20 \text{ lb./ac. of } P_2O_5 \text{ as Super.} \\
   K & = 40 \text{ lb./ac. of } K_2O \text{ as Pot. Sul.}
   \end{align*} \]
   The treatments were applied on 17.10.1933.

3. DESIGN:
   (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 9\'x6' (b) 8\'x4'. (v) N.A. (vi) Yes.

4. GENERAL:
   (i) Germination was satisfactory and crop stand was good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953-Cond. (b) No. (c) N.A. (v) (a) & (b) N.A. (vi) & (vii) Nil.

5. RESULTS:
   (i) 409 lb./ac.
   (ii) 58.79 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>374</td>
</tr>
<tr>
<td>N</td>
<td>458</td>
</tr>
<tr>
<td>P</td>
<td>40.7</td>
</tr>
<tr>
<td>K</td>
<td>3.7</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>~ 24.39 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Gram (Rabi).
Object: To study the effect of a leguminous crop Gram grown with and without \( P_2O_5 \) on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS:
   (i) (a) Paddy Gram. (b) Paddy. (c) 10 C.L./ac. of FYM. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 60 lb./ac. (d) N.A. (e) N.A. (f) N.A. (g) N.A. (v) N.A. (vi) Nil. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.
2. TREATMENTS:
1. Control (no \( P_2O_5 \)).
2. 50 lb./ac. of \( P_2O_5 \) as Super.
3. 100 lb./ac. of \( P_2O_5 \) as Super.
4. 150 lb./ac. of \( P_2O_5 \) as Super.
5. Fallow (sown in kharif and fallow in rabi).

3. DESIGN:
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24' x 18'. (b) 15' x 9'. (v) 41/2 ring round the net plot. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 (kharif)—1952 (rabi). (b) No. (c) N.A. (r) (a) N.A. (b) N.A. (vi) No reason given in records for low yields. (vi) Nil.

5. RESULTS:
(i) 231 lb./ac.
(ii) 42.8 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of gram in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>245</td>
</tr>
<tr>
<td>2</td>
<td>248</td>
</tr>
<tr>
<td>3</td>
<td>221</td>
</tr>
<tr>
<td>4</td>
<td>213</td>
</tr>
<tr>
<td>5</td>
<td>Fallow</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>19.12 lb./ac.</td>
</tr>
</tbody>
</table>

Crop:Gram (Rabi).
Ref:- Gj. 50(127).
Type:-‘M’.

Object:-To study the effect of leguminous crop Gram grown with and without \( P_2O_5 \) on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS:
(i) (a) Paddy-Gram. (b) Paddy. (c) 10 C.L./ac. of compost/manure. (ii) (a) Medium black. (b) N.A.
(iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 60 lb./ac. (d) N.A. (e) N.A. (f) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) Rabi season hence negligible. (x) N.A.

2. TREATMENTS:
1. Control (no \( P_2O_5 \)).
2. 50 lb./ac. of \( P_2O_5 \) as Super.
3. 100 lb./ac. of \( P_2O_5 \) as Super.
4. 150 lb./ac. of \( P_2O_5 \) as Super.
5. Fallow (sown in kharif and fallow in rabi).

3. DESIGN:
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24' x 18'. (b) 15' x 9'. (v) 41/2 ring round the net plot. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) Kharif 1949—1950 to rabi 1952—1953. (b) No. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 711 lb./ac.
(ii) 154.3 lb./ac.
(iii) Treatments do not differ significantly.
###(iv) Av. yield of gram in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>761</td>
</tr>
<tr>
<td>2.</td>
<td>748</td>
</tr>
<tr>
<td>3.</td>
<td>615</td>
</tr>
<tr>
<td>4.</td>
<td>720</td>
</tr>
<tr>
<td>5. Fallow</td>
<td></td>
</tr>
</tbody>
</table>

S.E./mean = 68.97 lb./ac.

---

**Crop: Gram (Rabi).**

**Site:** Agri. Res. Stn., Bulsar.

**Object:** To study the effect of leguminous crop Gram grown with and without P2O5 on the succeeding cereal crop Paddy.

#### 1. BASAL CONDITIONS:

- (i) (a) Paddy-Gram. (b) Paddy. (c) 10 C.L./ac. of compost manure. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 30 lb./ac. (d) and (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) Rabi season hence negligible.

#### 2. TREATMENTS:

1. Control (no P2O5).
2. 50 lb./ac. of P2O5 as Super.
3. 100 lb./ac. of P2O5 as Super.
4. 150 lb./ac. of P2O5 as Super.
5. Sown in kharif and fallow in rabi.

#### 3. DESIGN:

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24’x18’. (b) 15’x9’. (v) 1 ring round the net plot. (vi) Yes.

#### 4. GENERAL:

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1939 (kharif) - 1952 (rabi). (b) No. (c) N.A. (v) N.A. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS:

- (i) 314 lb./ac.
- (ii) 160/9 lb./ac.

- (iii) Treatments do not differ significantly.

- (iv) Av. yield of gram in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>528</td>
</tr>
<tr>
<td>2.</td>
<td>228</td>
</tr>
<tr>
<td>3.</td>
<td>484</td>
</tr>
<tr>
<td>4.</td>
<td>516</td>
</tr>
<tr>
<td>5. Fallow</td>
<td></td>
</tr>
</tbody>
</table>

S.E./mean = 71.9 lb./ac.

---

**Crop: Gram (Rabi).**

**Site:** Agri. Res. Stn., Dohad.

**Object:** To study the effect of leguminous crop Gram grown with and without P2O5 on the succeeding cereal crop Maize.

#### 1. BASAL CONDITIONS:

- (i) (a) Gram-Maize. (b) Maize (c) 10 C.L./ac. of F.Y.M. (ii) (a) Black. (b) Refer soil analysis, Dohad. (iii) 24/10/1950. (iv) (a) N.A. (b) Sowing with a plough to which a draw tube is attached. (c) 60 lb./ac. (d) 15’x12’. (e) N.A. (f) 10 C.L./ac. of F.Y.M. (vi) Yellow gram. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 14.3.1951.
2. TREATMENTS:
1. Control (no \(\text{P}_2\text{O}_5\)).
2. 50 lb./ac. of \(\text{P}_2\text{O}_5\) as Super.
3. 100 lb./ac. of \(\text{P}_2\text{O}_5\) as Super.
4. 150 lb./ac. of \(\text{P}_2\text{O}_5\) as Super.
5. Fallow in rabì, manured with 10 C.L./ac. of F.Y.M. in kharif.
Manures were applied in rows and then mixed up with the soil by hand digging.

3. DESIGN:
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 50'×21'. (b) 30'×15'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) The germination was good but later crop suffered due to lack of moisture. (ii) There was a slight attack of frost, damage to the extent of 15 to 20%. (iii) Grain yield. (iv) (a) 1950–1951. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 187 lb./ac.
(ii) 86.7 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>209</td>
</tr>
<tr>
<td>2.</td>
<td>184</td>
</tr>
<tr>
<td>3.</td>
<td>184</td>
</tr>
<tr>
<td>4.</td>
<td>172</td>
</tr>
<tr>
<td>5.</td>
<td>Fallow</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>35.4 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Gram (Rabì).
Object: To find out the suitable spacing and economic seed rate for Gram.

Ref: Gj. 53(52).
Type: 'C'.

1. BASAL CONDITIONS:
(i) (a) Gram—Wheat. (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis. Arnej. (iii) 23.10.1953. (iv) (a) 4 to 5 harrowings prior to sowing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Chafa (medium). (vii) Un irrigated. (viii) Nil. (ix) Rabi season hence negligible. (x) 18.2.1954.

2. TREATMENTS:
Main-plot treatments:
3 spacings: \(S_1=12\)', \(S_2=15\)' and \(S_3=18\)'.
Sub-plot treatments:
3 seed rates: \(R_1=20\), \(R_2=30\) and \(R_3=40\) lb./ac.

3. DESIGN:
(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 33'x18' for 12' and 15' spacing and 33'x18' for 18' spacing. (b) 30'×16'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Germination was satisfactory and stand of crop was good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—continued. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 510.2 lb./ac.
(ii) (a) 57.17 lb./ac.
(b) 59.90 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>467.8</td>
<td>514.6</td>
<td>506.2</td>
<td>496.2</td>
</tr>
<tr>
<td>R2</td>
<td>547.1</td>
<td>514.6</td>
<td>507.0</td>
<td>522.9</td>
</tr>
<tr>
<td>R3</td>
<td>474.5</td>
<td>528.9</td>
<td>513.5</td>
<td>511.5</td>
</tr>
<tr>
<td>Mean</td>
<td>496.5</td>
<td>516.4</td>
<td>514.9</td>
<td>510.2</td>
</tr>
</tbody>
</table>

S.E. of difference of two:
1. S marginal means
2. R marginal means
3. R means at the same level of S
4. S means at the same level of R

Crop: Chinamug (Kharif).

Object: To study the effect of leguminous crop Chinamug grown with and without P₂O₅ on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:
   (i) Nil. (b) Lang in rabi. (c) Nil. (iii) Black cotton. (b) N.A. (iii) 4.8.1948. (iv) (a) N.A. (b) Drilling. (c) 18 lb./ac. (d) Between rows 1' and between plants irregular. (e) N.A. (f) Nil (vi) Chinamug (early). (xii) Unirrigated. (viii) 1 weeding only. (ix) 5.50°. (x) 20.10.1948.

2. TREATMENTS:
   1. No P₂O₅ (control).
   2. 50 lb./ac. of P₂O₅ as Super.
   3. 100 lb./ac. of P₂O₅ as Super.
   4. 150 lb./ac. of P₂O₅ as Super.
   5. Fallow in kharif, manured with 10 C.L./ac. of FY. M. in rabi.

3. DESIGN:
   (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 5' x 34'. (b) 47' x 30'. (v) 2' around the net plot. (v) Yes.

4. GENERAL:
   (i) The crop failed. (ii) Nil. (iii) Grain and fodder yield and no. of plants. (iv) (a) 1948-1954. (b) N.A. (c) N.A. (v) (a) and (b) No. (vi) The experiment failed. Accordingly the succeeding cereal crop Rabi Jowar could not be sown. (vii) Nil.

5. RESULTS:
   (i) 20 lb./ac.
   (ii) 12.77 lb./ac.
   (iii) The treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>21</td>
</tr>
<tr>
<td>2.</td>
<td>22</td>
</tr>
<tr>
<td>3.</td>
<td>18</td>
</tr>
<tr>
<td>4.</td>
<td>20</td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>S.E./mean</td>
<td>5.71 lb./ac.</td>
</tr>
</tbody>
</table>
Crop: Chinamug (Kharif).

Object: To study the effect of leguminous crop (Chinamug) grown with and without P_2O_5 on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) No. (b) Jowar. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 26.6.1951. (iv) (a) N.A. (b) Drilling. (c) 18 lb./ac. (d) Between rows - 24" and between plants - irregular. (e) N.A. (f) Nil. (g) Chinamug (early). (h) Unirrigated. (i) 2 gap fillings 27, 28.7.1951, 3 thinnings, 7 weedings and 1 interculturing. (ix) 8.9.1951. (x) 18.9.1951 and 27.9.1951.

2. TREATMENTS:
   1. No P_2O_5 (control).
   2. 50 lb./ac. of P_2O_5 as Super.
   3. 100 lb./ac. of P_2O_5 as Super.
   4. 150 lb./ac. of P_2O_5 as Super.

3. DESIGN:
   (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 48'x30'. (b) 36'x18'. (v) 6' around the net plot. (vi) Yes.

4. GENERAL:
   (i) The general growth of the crop was normal. (ii) Attack of hairy caterpillar, negligible damage. (iii) Grain yield. (iv) (a) 1948-1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 263 lb./ac.
   (ii) 97.5 lb./ac.
   (iii) The treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>233</td>
</tr>
<tr>
<td>2.</td>
<td>245</td>
</tr>
<tr>
<td>3.</td>
<td>271</td>
</tr>
<tr>
<td>4.</td>
<td>305</td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>S.E./mean</td>
<td>43.59 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Chinamug (Kharif).

Object: To study the effect of leguminous crop (Chinamug) with and without P_2O_5 on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) No. (b) Jowar. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 26.6.1951. (iv) (a) N.A. (b) Drilling. (c) 18 lb./ac. (d) 24" between rows. (e) Nil. (f) Nil. (g) N.A. (h) Unirrigated. (i) 1 weeding and 1 interculturing. (ix) 6.92`. (x) 18.9.1951 and 27.9.1951.

2. TREATMENTS:
   1. No P_2O_5 (control).
   2. 50 lb./ac. of P_2O_5 as Super.
   3. 100 lb./ac. of P_2O_5 as Super.
   4. 150 lb./ac. of P_2O_5 as Super.

3. DESIGN:
   (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 48'x30'. (b) 36'x18'. (v) 6' around the net plot. (vi) Yes.
4. GENERAL:
(i) Growth stunted for want of sufficient moisture. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948 - 1954. (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 24 lb/ac.
(ii) 14.79 lb/ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb/ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>26</td>
</tr>
<tr>
<td>2.</td>
<td>26</td>
</tr>
<tr>
<td>3.</td>
<td>23</td>
</tr>
<tr>
<td>4.</td>
<td>23</td>
</tr>
<tr>
<td>5.</td>
<td>--</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>6.01 lb/ac</td>
</tr>
</tbody>
</table>

Crop: Chinamug (Kharif).
Object: To study the effect of leguminous crop Chinamug grown with and without P2O5 on the succeeding cereal crop Jawar.

1. BASAL CONDITIONS:

2. TREATMENTS:
1. No P2O5 (control).
2. 50 lb/ac. of P2O5 as Super.
3. 100 lb/ac. of P2O5 as Super.
4. 150 lb/ac. of P2O5 as Super.
5. Follow in kharif and manure with 10 C.L/ac. of F.Y.M. in rabi.
Manures applied on 18.6.1952.

3. DESIGN:
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 48'×30'. (b) 36'×18'. (v) 6' around the set plot. (vi) Yes.

4. GENERAL:
(i) Due to constant rain the growth was held up and decreased the yield to a considerable extent. (ii) Rabbits and monkeys together damaged the crop. (iii) Grain and fodder yield. (iv) (a) 1948 - 1954. (b) No. (c) N.A. (vi) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 297 lb/ac.
(ii) 79.70 lb/ac.
(iii) The treatments do not differ significantly.
(iv) Av. yield of grain in lb/ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>233</td>
</tr>
<tr>
<td>2.</td>
<td>328</td>
</tr>
<tr>
<td>3.</td>
<td>361</td>
</tr>
<tr>
<td>4.</td>
<td>266</td>
</tr>
<tr>
<td>5.</td>
<td>--</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>35.63 lb/ac</td>
</tr>
</tbody>
</table>
Crop :- Chinamug (Kharif).
Object :- To study the effect of leguminous crop Chinamug grown with and without \( P_2O_5 \) on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) No.  (b) Jowar.  (c) Nil.  (ii) (a) Black cotton soil.  (b) N.A.  (iii) 16.5.1953.  (iv) (a) 3 harrowings.  (b) Drilling.  (c) 18 lb./ac.  (d) 24'.  (e) N.A.  (v) Nil.  (vi) Chinamug (early).  (vii) Unirrigated.  (viii) Gap filling, interculturing and 3 weedings.  (ix) 36.23'.  (x) 23, 24.9.1953.

2. TREATMENTS:
   1. No \( P_2O_5 \) (control).
   2. 50 lb./ac. of \( P_2O_5 \) as Super.
   3. 100 lb./ac. of \( P_2O_5 \) as Super.
   4. 150 lb./ac. of \( P_2O_5 \) as Super.

3. DESIGN:
   (i) R.B.D.  (ii) (a) 5.  (b) N.A.  (iii) 5.  (iv) (a) 48'x30'.  (b) 36'x18'.  (v) 6' around this net plot.  (vi) Yes.

4. GENERAL:
   (i) Uneven growth. Rains at the time of flowering affected the yield.  (ii) No.  (iii) Grain yield.  (iv) (a) 1948-1954.  (b) No.  (c) N.A.  (v) (a) N.A.  (b) N.A.  (vi) and (vii) Nil.

5. RESULTS:
   (i) 68.97 lb./ac.
   (ii) 24.20 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>65.58</td>
</tr>
<tr>
<td>2.</td>
<td>65.72</td>
</tr>
<tr>
<td>3.</td>
<td>68.94</td>
</tr>
<tr>
<td>4.</td>
<td>75.67</td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>S.E./mean</td>
<td>10.9 lb./ac.</td>
</tr>
</tbody>
</table>

Crop :- Udid (Kharif).
Object :- To study the effect of \( P_2O_5 \) applied to Udid on the succeeding cotton crop grown with and without N.

1. BASAL CONDITIONS:
   (i) (a) Nil.  (b) Cotton.  (c) 5 C.L./ac. of F.Y.M.  (ii) (a) Medium black.  (b) Refer soil analysis, Amreli.  (iii) 19.7.1949.  (iv) (a) to (e) N.A.  (v) Nil.  (vi) Udid (local).  (vii) Unirrigated.  (viii) 4 weedings and 2 interculturings.  (ix) 13.75'.  (x) 27.12.1949.

2. TREATMENTS:
   1. Udid grown without \( P_2O_5 \).
   2. Udid grown with \( P_2O_5 \) at 30 lb./ac. as Super.

3. DESIGN:
   (i) R.B.D.  (ii) (a) 2.  (b) N.A.  (iii) 4.  (iv) (a) 44'x30'.  (b) 40'x24'.  (v) 2'x3'.  (vi) Yes.

4. GENERAL:
   (i) Normal.  (ii) Nil.  (iii) Grain yield.  (iv) (a) 1946-1949.  (b) No.  (c) N.A.  (v) (a) No.  (b) N.A.  (vi) No reasons given for low yield.  (vii) Nil.
5. RESULTS:

(i) 318 lb./ac.
(ii) 50.73 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>318</td>
</tr>
<tr>
<td>2.</td>
<td>318</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=25.36 lb./ac.</td>
</tr>
</tbody>
</table>

Crop := Tur (Rabi).  
Ref := Gj. 48(5).  
Type := ’M’.

Object := To study the effect of the leguminous crop Tur grown with and without P2O5 on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:

(i) (a) Tur-Jowar. (b) Jowar. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 30.9.1948. (iv) (a) N.A. (b) Drilling. (c) 15 to 20 lb./ac. (d) 3' between rows; 1' between plants. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) 2 thinings and 2 interculturing. (ix) 4.88'. (x) 23.3.1949.

2. TREATMENTS:

1. No P2O5 (control).
2. 50 lb./ac. of P2O5 as Super.
3. 100 lb./ac. of P2O5 as Super.
4. 150 lb./ac. of P2O5 as Super.
5. Fallow.

3. DESIGN:

(i) R.B.D. (ii) (a) S. (b) N.A. (iii) 5. (iv) (a) 42' x 39'. (b) 30' x 18'. (v) 6' ring around the plot. (vi) Yes.

4. GENERAL:

(i) Below normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948–1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 223 lb./ac.
(ii) =4.27 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>226</td>
</tr>
<tr>
<td>2.</td>
<td>210</td>
</tr>
<tr>
<td>3.</td>
<td>222</td>
</tr>
<tr>
<td>4.</td>
<td>234</td>
</tr>
<tr>
<td>5.</td>
<td>—</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=42.03 lb./ac.</td>
</tr>
</tbody>
</table>

Crop := Tur (Rabi).  
Ref := Gj. 49(10)/49(5).  
Type := ‘M’.

Object := To study the effect of the leguminous crop Tur grown with and without P2O5 on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Jowar. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) Tur 1-10.1949; Cotton 22.7.1949. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. to 15 lb./ac. (d) 8.4'. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Weeding, thinning, interculturing and 2 gap filling. (ix) Nil. (x) 6.4.1950.
2. TREATMENTS:
1. No P₂O₅ (control).
2. 50 lb./ac. of P₂O₅.
3. 100 lb./ac. of P₂O₅.
4. 150 lb./ac. of P₂O₅.
5. Cotton Suyog.
P₂O₅ as Super applied on 21-9-1949.

3. DESIGN:
(i) L. Sq.
(ii) 5.
(iii) 5.
(iv) (a) 42'×30', (b) 30'×18', (v) 6' around the net plot. (vi) Yes.

4. GENERAL:
(i) N.A.
(ii) Slight attack of Jassids on tur, no damage. (iii) Grain yield. (iv) (a) 1948—1954. (b) Yes.
(c) N.A. (v) (a) No. (b) N.A. (vi) N.A. (vii) The exp. is analysed with treatment, no. 5 missing.
The yield of cotton is given separately.

5. RESULTS:
(i) 393 lb./ac.
(ii) 100.8 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>433</td>
</tr>
<tr>
<td>2.</td>
<td>382</td>
</tr>
<tr>
<td>3.</td>
<td>398</td>
</tr>
<tr>
<td>4.</td>
<td>359</td>
</tr>
</tbody>
</table>

S.E/mean = 45.14 lb./ac.
Av. yield of kapar = 379 lb./ac.

Obj. Studies the effect of the leguminous crop Tur grown with and without P₂O₅ on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:
(i) Tur-Jowar. (ii) Jowar. (c) Nil. (ii) (a) Black cotton soil, (b) Refer soil analysis, Surat. (iii) Tur
25.8.1950. (iv) (a) N.A. (b) Drilling. (c) 13 to 20 lb./ac.—1 plant at final stand. (d) 3'×1½'. (e)—.
(x) 18.3.1951.

2. TREATMENTS:
1. No P₂O₅ (control).
2. 50 lb./ac. of P₂O₅.
3. 100 lb./ac. of P₂O₅.
4. 150 lb./ac. of P₂O₅.
5. Cotton Suyog.
P₂O₅ as Super applied on 23.8.1950.

3. DESIGN:
(i) L. Sq.
(ii) 5.
(iii) 5.
(iv) (a) 42'×30', (b) 30'×18'. (v) 6' around the net plot. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Borer attack. (iii) Grain yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) No
(b) N.A. (vi) N.A. (vii) The experiment analysed with treatment no. 5 missing. The yield of cotton is
given separately.

5. RESULTS:
(i) 484 lb./ac.
(ii) 37.11 lb./ac.
(iii) Treatments do not differ significantly.
Object: To study the effect of the leguminous crop Tur raised with and without P<sub>2</sub>O<sub>5</sub> on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) Tur-Jowar, (b) Jowar, (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 4.9.1951. (iv) (a) N.A. (b) Drilling. (c) 10 to 15 lb./ac. (d) 9' to 10' between plants and 10' between rows. (e) —. (f) Nil. (vi) Local. (vii) Unirrigated. (viii) Thinning, 3 interculturings and weeding. (ix) Nil. (x) 7.3.1952.

2. TREATMENTS:
   1. No P<sub>2</sub>O<sub>5</sub> (control).
   2. 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
   3. 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
   4. 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
   5. Cotton.

3. DESIGN:
   (i) L. Sq. (ii) 5. (b) N.A. (iii) 5. (iv) (a) 42' x 30'. (b) 30' x 18'. (v) 6' all around the net plot. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Slight attack of pod borer. (iii) Grain yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Experiment analysed with one missing plot. Mean yield of cotton is given separately.

5. RESULTS:
   (i) 8.76 lb./ac.
   (ii) ±1.71 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>484</td>
</tr>
<tr>
<td>2.</td>
<td>458</td>
</tr>
<tr>
<td>3.</td>
<td>498</td>
</tr>
<tr>
<td>4.</td>
<td>496</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>±16.61 lb./ac.</td>
</tr>
<tr>
<td>Av. yield of kapas</td>
<td>599 lb./ac.</td>
</tr>
</tbody>
</table>

Object: To study the effect of the leguminous crop Tur grown with and without P<sub>2</sub>O<sub>5</sub> on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) Jowar-Tur. (b) Jowar. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surnat. (iii) 25.2.1952. (iv) (a) N.A. (b) Drilling. (c) 15 to 20 lb./ac. (d) 3' between rows and 11' between plants. (e) N.A. (f) Nil. (vi) Local. (vii) Unirrigated. (viii) Thinning and 3 interculturings. (ix) Nil. (x) 9.3.1952.
2. TREATMENTS:
1. No P₂O₅ (control).
2. 50 lb./ac. of P₂O₅.
3. 100 lb./ac. of P₂O₅.
4. 150 lb./ac. of P₂O₅.
5. Cotton Suyog.
  P₂O₅ as Super applied on 7.9.1952.

3. DESIGN:
(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×15'. (v) 6' around the net plot. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was analysed with one treatment missing. The mean yield of treatment 5 is given separately.

5. RESULTS:
(i) 430 lb./ac.
(ii) 34.69 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>426</td>
</tr>
<tr>
<td>2.</td>
<td>430</td>
</tr>
<tr>
<td>3.</td>
<td>438</td>
</tr>
<tr>
<td>4.</td>
<td>426</td>
</tr>
<tr>
<td>5.</td>
<td>—</td>
</tr>
</tbody>
</table>

S.E./mean = 15.52 lb./ac.
Av. yield of *kapas* = 235 lb./ac.

Crop :-Tur (Rabi).  Ref :-Gj. 53(44)/52(35)/51(21)/50(15)/49(10)/48(5).
Site :-Agri. Res. Stn., Surat.  Type :-'M'.
Object :-To study the effect of leguminous crop Tur grown with and without P₂O₅ on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS:
(i) (a) *Jowar*—Tur. (b) *Jowar*. (c) NIL. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 26-8-1953. (iv) (a) 3 harrowings. (b) Drilling. (c) to (e) N.A. (v) NIL. (vi) Local. (vii) Unirrigated. (viii) 1 thinning, 2 weedings and 3 interculturings. (ix) NIL. (x) 5.4.1954.

2. TREATMENTS:
1. No P₂O₅ (control).
2. 50 lb./ac. of P₂O₅ as Super.
3. 100 lb./ac. of P₂O₅ as Super.
4. 150 lb./ac. of P₂O₅ as Super.
5. Cotton Suyog.

3. DESIGN:
(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' around the net plot. (vi) Yes.

4. GENERAL:
(i) Below normal. (ii) Attack of top borer and yield was affected to about 50%. (iii) Height, stand and grain yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) NIL. (vii) The exp. was analysed with one treatment missing.

5. RESULTS:
(i) 397 lb./ac.
(ii) 47.58 lb./ac.
(iii) Treatments differ significantly.
Object: To study the effect of the leguminous crop Wal grown with and without P₂O₅ on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS:
   (i) (a) Paddy—Wal. (b) Paddy. (c) 10 C.L./ac. of P Y.M. (ii) (a) Medium black. (b) N.A. (iii) N.A.
   (iv) (a) N.A. (b) Broadcasting. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A.
   (ix) N.A. (x) N.A.

2. TREATMENTS:
   1. No P₂O₅ (control).
   2. 50 lb./ac. of P₂O₅ as Super.
   3. 100 lb./ac. of P₂O₅ as Super.
   4. 150 lb./ac. of P₂O₅ as Super.
   5. Fallow in rabi and sown in kharif.

3. DESIGN:
   (i) R.B.D. (ii) 5. (b) N.A. (iii) 5. (iv) (a) 24' × 18', (b) 15' × 9'. (v) 4' × 4' around the net plot. (vi) N.A.

4. GENERAL:

5. RESULTS:
   (i) 802 lb./ac.
   (ii) 126.5 lb./ac.
   (iii) The treatments do not differ significantly.
   (iv) Av. yield of grain in lb./ac.

   Treatment | Av. yield |
   ---------- |-----------|
   1.         | 713        |
   2.         | 807        |
   3.         | 855        |
   4.         | 833        |
   5.         | —          |
   S.E./mean  | = 56.54 lb./ac. |
2. **TREATMENTS**:

1. No \( \text{P}_2\text{O}_5 \) (Control).
2. 50 lb./ac. of \( \text{P}_2\text{O}_5 \) as Super.
3. 100 lb./ac. of \( \text{P}_2\text{O}_5 \) as Super.
4. 150 lb./ac. of \( \text{P}_2\text{O}_5 \) as Super.
5. Fallow in rabi and sown in kharif.

3. **DESIGN**:

(i) R.B.D. (ii) (a) S. (b) N.A. (iii) S. (iv) (a) 24' \times 15'. (b) 15' \times 9'. (v) 41' around the net plot. (vi) Yes.

4. **GENERAL**:

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949–1952. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. **RESULTS**:

(i) 760 lb./ac.
(ii) 97.0 lb./ac.
(iii) The treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>759</td>
</tr>
<tr>
<td>2.</td>
<td>776</td>
</tr>
<tr>
<td>3.</td>
<td>730</td>
</tr>
<tr>
<td>4.</td>
<td>784</td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

S.E./mean = 43.36 lb./ac.

---

CROP: Wal (Rabi).  
Ref: Gj. 51(171).  
Type: 'M'.

Object: To study the effect of leguminous crop Wal grown with and without \( \text{P}_2\text{O}_5 \) on the succeeding cereal crop Paddy.

1. **BASAL CONDITIONS**:

(i) (a) Paddy-Wal—Gram. (b) Paddy in Kharif, Wal and Gram in rabi. (c) 10 C.L./ac. of compost given to paddy. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 80 lb./ac. (d) N.A. (e) N.A. (f) Nil. (i) N.A. (vii) N.A. (viii) N.A. (ix) Nil. (x) N.A.

2. **TREATMENTS**:

1. No \( \text{P}_2\text{O}_5 \) (Control).
2. 50 lb./ac. of \( \text{P}_2\text{O}_5 \) as Super.
3. 100 lb./ac. of \( \text{P}_2\text{O}_5 \) as Super.
4. 150 lb./ac. of \( \text{P}_2\text{O}_5 \) as Super.
5. Fallow in rabi and sown in kharif.

3. **DESIGN**:

(i) R.B.D. (ii) (a) S. (b) N.A. (iii) S. (iv) (a) 24' \times 18'. (b) 15' \times 9'. (v) 41' around the net plot. (vi) Yes.

4. **GENERAL**:

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949–1952. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. **RESULTS**:

(i) 432 lb./ac.
(ii) 182.9 lb./ac.
(iii) The treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>472</td>
</tr>
<tr>
<td>2</td>
<td>379</td>
</tr>
<tr>
<td>3</td>
<td>460</td>
</tr>
<tr>
<td>4</td>
<td>419</td>
</tr>
<tr>
<td>5</td>
<td>—</td>
</tr>
</tbody>
</table>

S.E./mean = 31.7 lb./ac.

Crop : Lang (Rabi).

Object :— To study the effect of leguminous crop Lang raised with and without P₂O₅ on the succeeding cereal crop Jowar.

1. BASAL CONDITIONS :
(i) (a) Lang-Jowar. (b) Jowar. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 29.9.1952. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) 2' spacing. (e) —. (v) Nil. (vi) T-2-12. (vii) Unirrigated. (viii) N.A. (ix) Nil. (x) 31.1.1953.

2. TREATMENTS :
1. No P₂O₅ (control).
2. 50 lb./ac. of P₂O₅ as Super.
3. 100 lb./ac. of P₂O₅ as Super.
4. 150 lb./ac. of P₂O₅ as Super.
5. Fallow.

P₂O₅ applied on 26.8.1952.

3. DESIGN :
(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 44' X 24'. (b) 44' X 20'. (v) 2 around the net plot. (vi) Yes.

4. GENERAL :
(i) Crop growth stunted due to severe heat and want of moisture. (ii) Nil. (iii) Grain and fodder yield.
(iv) (a) N.A. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :
(i) 16 lb./ac.
(ii) 7.33 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>5</td>
<td>—</td>
</tr>
</tbody>
</table>

S.E./mean = 3.28 lb./ac.

Crop :- Sugarcane.
Site :- Agri. Res. Stn., Vyara.

Object :— To study the effect of A/S and G.N.C. along with F.Y.M. on Sugarcane yield.

Ref : Gj. 50(24).
Type : 'M'.

1. BASAL CONDITIONS :
(i) (a) Paddy-Sugarcane. (b) Paddy. (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 16, 17.2.1950. (iv) (a), (b) and (c) N.A. (d) 3½'. (e) 36000 three budded setts/ac. (v) Nil. (vi) Co-52°. (vii) Unirrigated. (viii) Weeding and earthing up thrice. (ix) 74.20°. (x) End of Feb. 1951.
2. TREATMENTS:

Main-plot treatments:
2 levels of F.Y.M. : F₁ = 10 and F₂ = 20 C.L./ac.

Sub-plot treatments:

3. DESIGN:
(i) Split-plot. (ii) (a) 2 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 55.3' x 31.5'. (b) 44.8' x 24.5'. (v) one row at either side and 5.3' at either end. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Attack of borer. Control measures taken N.A. (iii) Germination counts, height, girth, no. of internodes and cane yield. (iv) (a) 1953—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 28.81 ton/ac.
(ii) (a) 2.89 ton/ac.
(b) 3.31 ton/ac.
(iii) Only the interaction F x R is highly significant.
(iv) Av. yield of sugarcane in ton/ac.

<table>
<thead>
<tr>
<th></th>
<th>F₁</th>
<th>F₂</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>R₃</td>
<td>29.40</td>
<td>28.32</td>
<td>28.81</td>
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</table>

S.E. of difference of two
1. F marginal means = 0.96 ton/ac.
2. R marginal means = 1.35 ton/ac.
3. R means at the same level of F = 1.91 ton/ac.
4. F means at the same level of R = 1.83 ton/ac.

Object:—To study the effect of A/S and G.N.C. along with F.Y.M. on Sugarcane yield.

1. BASAL CONDITIONS:
(i) (a) Paddy—Sugarcane. (b) Paddy. (c) N.A. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 26.1.1951 and 27.1.1951. (iv) (a) and (b) N.A. (c) 36,000 three budded setts/ac. (d) Between rows—3.5'. (e) N.A. (v) Nil. (vi) CO—527. (vii) Irrigated. (viii) Weeding twice and earthing up thirce. (ix) February 1952.

2. TREATMENTS:

Main-plot treatments:
2 levels of F.Y.M. : F₁ = 10 and F₂ = 20 C.L./ac.

Sub-plot treatments:

DESIGN:
(i) Split-plot. (ii) (a) 2 main-plots/block ; 3 sub-plot/main-plot. (b) N.A. (iii) 6. (iv) (a) 31.5' x 55.3'. (b) 24.5' x 44.5'. (v) N.A. (vi) Yes.
4. GENERAL:
(i) Good. (ii) Stem borer attack 1% and shoot borer attack 2%. (iii) Germ formation count, girth, height of sugarcane, No. of internodes. (iv) (a) 1950-1954, (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 3.48 ton/ac.
(ii) (a) 5.50 ton/ac.
(b) 2.55 ton/ac.
(iii) None of the effects is significant.
(iv) Av. yield of sugarcane in lb./ac.

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<tr>
<td>R3</td>
<td>33.18</td>
<td>33.71</td>
<td>33.44</td>
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</table>

Mean 33.42 36.35 34.18

S.E. of difference of two
1. F marginal means + 3.80 ton/ac.
2. R marginal means + 1.64 lb./ac.
3. R means at the same level of F + 1.37 lb./ac.
4. F means at the same level of R + 2.16 ton/ac.

Crop : Sugarcane.
Ref : G.J. 52(54).
Type : ‘N’.

Object : To study the effect of A/S and G.N.C. along with F.Y.M. on Sugarcane yield.

1. BASAL CONDITIONS:
(i) (a) Paddy—Sugarcane. (b) Paddy. (c) N.A. (d) (i) Black soil. (ii) So. of soil analysis, Vyara. (iii) January 19 and 4.2.1952. (iv) (a) and (b) N.A. (v) (x) (a) 2.03 three-beded sets/ac. (d) (i) 3’ between rows and 9 rows in a plot. (e) N.A. (f) Nil. (g) C.J. 33. (h) Irrigation. (vii) Weeding twice and earthing up thrice. (ix) 40.91, (x) 17 and 25.1.1953.

2. TREATMENTS:
Main-plot treatments:
2 levels of F.Y.M. : F1 = 10 and F2 = 23 C. L./ac
Sub-plot treatments:
3 ratios of N (applied at 120 lb./ac) : R1 = A/S : G.N.C. in 1:1, R2 = A/S : G.N.C. in 1:2 and R3 = G.N.C., is each.

3. DESIGN:
(i) Split-plot, (ii) (a) 2 main-plots/black and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 55.5’ x 31.5’. (b) 44.5’ x 24.5’. (v) 1 row on either side and 5.4’ on either end. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Attack of stem borer ; D.D.T. and Pyrilla. (iii) Germ formation count, height, girth, internode and sugarcane yield. (iv) (a) 1950-1954. (b) No. (c) N.A. (d) Nil and (b) N.A. (d) and (e) Nil.

5. RESULTS:
(i) 24.65 ton/ac.
(ii) (a) 1.50 ton/ac.
(b) 2.06 ton/ac.
(iii) None of the effects is significant.
(iv) Avg. yield of sugarcane in ton/acre.

<table>
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<td>R₂</td>
<td>23.70</td>
<td>25.20</td>
<td>24.45</td>
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<tr>
<td>R₃</td>
<td>25.00</td>
<td>25.00</td>
<td>25.00</td>
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<tr>
<td>Mean</td>
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<td>25.20</td>
<td>24.65</td>
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</tbody>
</table>

S.E. of difference of two
1. F marginal means
2. R marginal means
3. R means at the same level of F
4. F means at the same level of R

---

Crop: Sugarcane.

Object: To study the effect of A/S and G.N.C. along with F.Y.M. on sugarcane yield.

1. BASAL CONDITIONS:
   (i) (a) Sugarcane—Paddy—Sugarcane, (b) Paddy, (c) 5 C.L./ac. of F.Y.M. + 100 lb./ac. of A/S + 300 lb./ac. of G.N.C.
   (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 31.1.1953.

2. TREATMENTS:
   Main-plot treatments:
   2 levels of F.Y.M.: F₁ = 10 and F₂ = 20 C.L./ac.
   Sub-plot treatments:

3. DESIGN:
   (i) Split-plot. (ii) 2 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 31.5' x 55.3'.

4. GENERAL:

5. RESULTS:
   (i) 32.75 ton/acre.
   (ii) (a) 5.94 ton/acre.
   (b) 5.44 ton/acre.
   (iii) Only main effect of R is significant.
   (iv) Avg. yield of cane in ton/acre.

<table>
<thead>
<tr>
<th></th>
<th>F₁</th>
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<td>32.75</td>
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S.E. of difference of two
1. F marginal means
2. R marginal means
3. R means at the same level of F
4. F means at the same level of R
Crop : Sugarcane.
Object : To study the N and P$_2$O$_5$ requirements of Sugarcane.

1. BASAL CONDITIONS :
   (i) (a) Sugarcane—Paddy—Sugarcane. (b) Paddy. (c) 5 C.L./ac. of F.Y.M. + 100 lb./ac. of A/S + 300 lb./ac. of G.N.C. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 31.1.1953. (iv) Ref. to (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) CO.419 (medium). (vii) 3.2.1952. (viii) 100 lb./ac. of F.Y.M, 36,000 three-budded setts/ac. (ix) 2.4 lb./ac. of P$_2$O$_5$. (x) 31.1.1953.

2. TREATMENTS :
   All combinations of (1) and (2)
   (1) 2 levels of P$_2$O$_5$ as Super : P$_0$ = 0 and P$_1$ = 0 lb./ac.
   (2) 3 levels of N as A/S : N$_1$ = 10, N$_2$ = 170 and N$_3$ = 220 lb./ac.

3. DESIGN :
   (i) 3 x 2 Fact in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24.5' x 55.5'. (b) 17.5' x 46.5'. (v) 3' x 4'. (vi) Yes.

4. GENERAL :
   (i) Good. (ii) Mild attack of pyrilla—5%. (iii) B.H.C. dusted. (iv) Germination count, tillinging count no. of internodes and sugarcane yield. (v) (a) 1953—1955. (b) No. of a and b. N.A. (vii) and (viii) Nil.

5. RESULTS :
   (i) 28.35 ton/ac.
   (ii) 2.48 ton/ac.
   (iii) Main effect of N is significant while main effect of P$_2$O$_5$ and interactions are not significant.
   (iv) Av. yield of cane in ton/ac.

<table>
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<tr>
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<tr>
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<td>26.78</td>
<td>27.22</td>
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<tr>
<td>N$_3$</td>
<td>32.32</td>
<td>29.82</td>
<td>31.07</td>
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</table>

S.E of marginal mean of N = 0.87 ton/ac.
S.E of marginal mean of P$_2$O$_5$ = 0.72 ton/ac.
S.E of body of table = 1.24 ton/ac.

Crop : Sugarcane.
Object : To study the intensity of irrigation required for Sugarcane.

1. BASAL CONDITIONS :
   (i) (a) Paddy—Sugarcane. (b) Paddy. (c) N.A. (iii) Medium black soil. (b) Refer soil analysis, Vyara. (iii) 3.2.1952. (iv) (a) & (b) N.A. (c) 36,000 three-budded setts/ac. (d) 3' between rows. (e) N.A. (v) 10 C.L./ac. of F.Y.M. + 123 lb./ac. of N as A/S & G.N.C. in the ratio 1:2. (vi) CO.419. (vii) Irrigated. (viii) 4 weedings and 2 earthing up. (ix) 42.52'. (x) 1.1.1953 & 31.1.1953.
2. TREATMENTS:

All combinations of (1), (2) and (3)

(1) 2 levels of P$_2$O$_5$ as Super: $P_0=0$ and $P_1=100$ lb./ac.

(2) 2 levels of Irrigation: $I_1=30'$A and $I_2=50'$A.

(3) 2 intervals of Irrigation: $T_1=$once in 15 days and $T_2=$once in 30 days.

3. DESIGN:

(i) 2$^n$ Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) $44.5' \times 24.5'$. b) $38.5' \times 17.5'$. (v) 1 row on either side and 2.9' at either end. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Attack of Stem-borer. (iii) Germination count, no. of tillers, height, girth and cane yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) & (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 31.46 ton./ac.

(ii) 1.94 ton./ac.

(iii) None of the effects is significant.

(iv) Av. yield of cane in ton./ac.

<table>
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<tr>
<th></th>
<th>$T_1$</th>
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<td>Mean</td>
<td>31.94</td>
<td>30.99</td>
<td>31.46</td>
<td>31.33</td>
<td>31.60</td>
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<td>$P_0$</td>
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<td>30.84</td>
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S.E. of any marginal mean =0.56 ton./ac.

S.E. of body of table =0.79 ton./ac.

---

Crop ^=Cotton.


Object ^=To study the effect of Super applied to the leguminous crops (Groundnut, Udid, Bajra) on the succeeding cereal crop Cotton grown with & without N.

1. BASAL CONDITIONS:

(i) (a) Cotton—legumes. (b) Bajra, Groundnut & Udid in Rabi. (c) As per treatment. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 14 to 21.8.1948. (iv) (a) 3 t harrowings & 1 ploughing. (b) Drilling. (c) 15 lb./ac. (d) 3' between rows. (e) N.A. (v) Nil. (vi) Pratep. (vii) Uirrigated. (viii) 3 weedings & 3 interculturings. (ix) 12.73'. (x) N.A.

2. TREATMENTS:

Main-plot treatments: All combinations of (1) and (2)

(1) 3 previous crops: $C_1=$Groundnut, $C_2=$Udid and $C_3=$Bajra.

(2) 2 levels of P$_2$O$_5$ as Super (applied to above crops): $P_0=0$ and $P_1=30$ lb./ac.

Sub-plot treatments:

2 levels of N (applied to cotton): $N_0=0$ and $N_1=30$ lb./ac.

A/S drilled in furrows at the time of sowing of cotton.
3. DESIGN:
(i) Split-plot. (ii) (a) 6 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iv) (a) 45' x 15'.
(b) 40' x 9'. (v) N.A. (vi) Yes.

4. GENERAL:

5. RESULTS:
(i) 763 lb/ac.
(ii) N.A.
(iii) N.A.
(iv) Average yield of kapas in lb/ac.

<table>
<thead>
<tr>
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<th>C2</th>
<th>C3</th>
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<td>N.A.</td>
</tr>
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<td>800</td>
<td>N.A.</td>
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<tr>
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<td>770</td>
<td>N.A.</td>
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</table>

S.E.'s—N.A.

Crop: Cotton (Kharif).
Site:—Agri. Res. Stn., Amreli.
Ref:—Gj. 49(80).
Type:—'M'.

Object:—To study the effect of Super applied to the succeeding crops (Groundnut, Udid and Bajra) on the succeeding crop Cotton grown with and without N.

1. BASAL CONDITIONS:
(i) (a) Cotton-legumes. (b) Legumes. (c) As per treatments. (d) Medium block. (e) Refer soil analysis Amreli. (f) 19.7/19.9. (g) (a) One ploughing and 3 harrowings. (h) Drilling: (d) 15 lb/ac.
(i) Between rows 36' and between plants—irregular. (e) N.A. (f) Nil. (g) Precip. (h) Irrigated. (i) 3 weedings and 3 interculturings. (j) 13.75'. (k) N.A.

2. TREATMENTS:
Main-plot treatments: All combinations of (1) and (2).
(1) 3 previous crops: C1 = Groundnut, C2 = Udid and C3 = Bajra.
(2) 3 levels of P2O5 as Super (applied to above crops): P0 = 0 and P1 = 30 lb/ac.
Sub-plot treatments: 2 levels of N (applied to cotton): N0 = 0 and N1 = 30 lb/ac.
A/S drilled in furrows at the time of sowing cotton.

3. DESIGN:
(i) Split-plot. (ii) (a) 6 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iv) (a) 45' x 15'.
(b) 40' x 9'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Due to scanty rainfall the growth was not good. The crop dried earlier than the normal ones. (ii) N.A. (iii) Yield of kapas. (iv) (a) 1946—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Yes and (vii) Nil.

5. RESULTS:
(i) 645 lb/ac.
(ii) (a) 79.89 lb/ac.
(b) 58.02 lb/ac.
(iii) Main effects of C, N and interactions C x P and C x N are significant. Others are not significant.
(iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>C1</th>
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<th>C3</th>
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S.E. of difference of two
1. C marginal means = 28.74 lb./ac.
2. P marginal means = 23.07 lb./ac.
4. N means at the same level of P = 23.60 lb./ac.
5. P means at the same level of N = 20.50 lb./ac.
6. N means at the same level of C = 29.00 lb./ac.
7. C means at the same level of N = 34.90 lb./ac.

Crop: Cotton (Kharif).
Object: To study the optimum requirements of N for Cotton.

1. BASAL CONDITIONS:
(i) (a) Cotton-Jowar or Bajra-Groundnut. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 26.6.1952. (iv) (a) 1 ploughing and 3 harrowings. (b) Seeds were sown with local wooden drill and covered with rapta. (c) 15 lb./ac. (d) Between rows 12" and between plants—irregular. (e) (v) 5 C.L./ac. of F.Y.M. was spread one month before sowing. (vi) Pratap (early). (vii) Unirrigated. (viii) 3 intercultivations, 1 weeding and 1 thinning. (ix) 11.71'. (x) N.A.

2. TREATMENTS:
All combinations of (1) and (2).
(1) 3 levels of A/S: N0 = 0, N1 = 2 and N2 = 4 cwts/ac. of A/S.
(2) 3 levels of Cellulose: C0 = 0, C1 = 2 and C2 = 5 ton/ac.
A/S was spread and was covered with cellulose material.

3. DESIGN:
(i) 3 x 3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 27' x 52'. (b) 15' x 40'. (v) 6' [all round the net plot. (vi) Yes.

4. GENERAL:
(i) The germination was poor. There were scanty rains after the middle of August which very much affected the yield. (ii) Picking of larvae was done between 16.8.1952 to 25.8.1952. (iii) Seed yield and stubble yield (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Surat. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 60 lb./ac.
(ii) 21.20 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of kapas in lb./ac.

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</tr>
<tr>
<td>C2</td>
<td>64</td>
<td>72</td>
<td>62</td>
<td>66</td>
</tr>
<tr>
<td>Mean</td>
<td>62</td>
<td>65</td>
<td>54</td>
<td>60</td>
</tr>
</tbody>
</table>

S.E. of any marginal mean = 5.00 lb./ac.
S.E. of body of table = 8.65 lb./ac.

Ref: Gj. 52(114).
Type: 'M'.
Crop: Cotton (Kharif).


Ref: Gj. 53(164)

Type: ‘M’.

Object: To study the optimum requirements of N on Cotton.

1. BASAL CONDITIONS:

(i) a Cotton-Jowar or Bajra-Groundnut. (ii) Groundnut. (iii) N.A. soil analysis. Amreli, Jan 24, 1953. (iv) (a) One chaffing and three harrowings. (b) Seven with wooden drill and covered with kapris. (c) 15 inches. (d) Between rows 18”. Between plants 8” apart. (e) N.A. (f) 5 C.L/ac. of FYM spread one month before sowing. (g) Planted early. (h) Unirrigated. (i) 7 intercroppings, 1 weeding and 1 thinning. (j) 34.35”.

2. TREATMENTS:

All combinations of (1) and (2)

(i) 3 levels of A/S: N1 = 0, N2 = 1 and N3 = 2 cwt/ac. of A/S.

(ii) 3 levels of Cellulose: C1 = 0, C2 = 2 and C3 = 4 oz/ac.

A/S was spread and was covered with cellulose material.

3. DESIGN:

(i) 3 x 3 Factorial Design. (ii) (a) N.A. (b) 5” x 32” x 27” x 57” (c) 5” x 47” x 15” x 47” all round the net plot. (iii) T.S.

4. GENERAL:

(i) The germination was poor. Due to heavy rains in the months of August and September, the crop was heavily damaged. (ii) Nil. (iii) Kapas yield. (iv) 2.11 lb/ac. (v) A.S. and (vi) N.A.

5. RESULTS:

(i) 102 lb/ac.

(ii) 4.4 lb/ac.

(iii) Only the main effect of N is significant.

(iv) Av. yield of kapas in lb/ac.

<table>
<thead>
<tr>
<th></th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>C0</td>
<td>71</td>
<td>91</td>
<td>23</td>
<td>91</td>
</tr>
<tr>
<td>C1</td>
<td>89</td>
<td>146</td>
<td>115</td>
<td>105</td>
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<tr>
<td>C2</td>
<td>89</td>
<td>140</td>
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</tr>
<tr>
<td>Mean</td>
<td>83</td>
<td>103</td>
<td>120</td>
<td>107</td>
</tr>
</tbody>
</table>

S.E. of any marginal mean = 8.5 lb/ac.
S.E. of body of table = 16.3 lb/ac.

Crop: Cotton (L/harif).


Ref: Gj. 48(87).

Type: ‘M’.

Object: To compare the effects of A/S and G.N.C. on Cotton.

1. BASAL CONDITIONS:

(i) (a) Cotton-Wheat and Jowar. (b) Wheat and Jowar. (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Dabhoi. 14.6.1948. (iv) (a) 1 ploughing and 1 harrowing. (b) Planted early. (c) N.A. (d) Nil. (e) Deshi. (d) Unirrigated. (vi) 1 weeding. (i) 14.71”.

2. TREATMENTS:

All combinations of (1) and (2) + a control (no manure)

(i) 3 levels of N: N1=20, N2=30 and N3=40 lb/ac.

(ii) 2 sources of N: S1=A/S and S2=G.N.C.
3. DESIGN:
(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 175'x225'. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Nil. (iii) Seed cotton yield. (iv) (a) 1947—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Plot wise yield data N.A., hence analysis could not be carried out.

5. RESULTS:
(i) 634 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>N₁</th>
<th>N₂</th>
<th>N₃</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>S₁</td>
<td>626</td>
<td>537</td>
<td>704</td>
<td></td>
<td>622</td>
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<td>S₂</td>
<td>669</td>
<td>681</td>
<td>526</td>
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<td>625</td>
</tr>
<tr>
<td>Mean</td>
<td>648</td>
<td>609</td>
<td>615</td>
<td></td>
<td>623</td>
</tr>
</tbody>
</table>

S.E.'s—N.A.

Crop :- Cotton (Kharif).
Site :- Agri. Res. Stn., Dabhoi.

Objective :- To study the residual effect of previous crops (manured and unmanured) on the yield of Cotton.

1. BASAL CONDITIONS:
(i) (a) No. (b) Leguminous crops with and without manures. (c) 30 lb./ac. of P₃O₅. (ii) (a) Black. (b) Refer soil analysis, Dabhoi. (iii) 14.6.1948. (iv) (a) to (e) N.A. (v) 30 lb./ac. of N as A/S. (vi) Deshi cotton. (vii) Unirrigated. (viii) N.A. (ix) 14.7'1. (x) 10, 26.1.1949, and 11.2.1949.

2. TREATMENTS:
All combinations of (1) and (2)
(1) 6 previous crops: C₁ = Jowar (Control), C₂ = Tur, C₃ = Groundnut, C₄ = Udid, C₅ = Gur and C₆ = Gram.
(2) 2 levels of P₃O₅ (applied to previous crops) : P₀ = No manuring and P₁ = 30 lb./ac. of P₃O₅ as Super.

3. DESIGN:
(i) 6×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 60'x40'. (b) 55'x20'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) N.A. (ii) N.A. (iii) Seed cotton yield. (iv) (a) 1947—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Plot wise yield data is N.A., hence analysis could not be carried out.

5. RESULTS:
(i) 625 lb./ac. (ii) N.A. (iii) N.A. (iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>C₁</th>
<th>C₂</th>
<th>C₃</th>
<th>C₄</th>
<th>C₅</th>
<th>C₆</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₀</td>
<td>308</td>
<td>295</td>
<td>771</td>
<td>310</td>
<td>317</td>
<td>338</td>
<td>393</td>
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<td>P₁</td>
<td>388</td>
<td>315</td>
<td>985</td>
<td>342</td>
<td>394</td>
<td>317</td>
<td>457</td>
</tr>
<tr>
<td>Mean</td>
<td>348</td>
<td>305</td>
<td>878</td>
<td>326</td>
<td>356</td>
<td>338</td>
<td>425</td>
</tr>
</tbody>
</table>

S.E.'s—N.A.
Crop: Cotton (Kharif).

Object: To study the optimum requirements of N for Cotton.

1. BASAL CONDITIONS:
   (i) Cotton-Jowar. (ii) Jowar. (c) Nil. (d) Black cotton soil. (e) Refer soil analysis, Surat.
   (iii) 25.6.1952. (iv) (a) N.A. (b) Dibbled. (c) 6' x 3". (e) 1-2 seed/dibble. (v) Nil. (vi) Sugarcane. (vii) Unirrigated. (viii) 7 interculturalings, 1 thinning and 3 weedings. (ix) 19.69%. (x) 5, 13.2.1953.

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 3 levels of A/S: N₀ = 0, N₁ = 2 and N₂ = 4 cwt/ac. of A/S.
   (2) 3 levels of cellulose matter: C₀ = 0, C₁ = 2 and C₂ = 5 ton/ac.
   Manuring on 6.6.1950.

3. DESIGN:
   (i) 3 x 3 Factorial in R.B.D. (ii) N.A. (iii) 5. (iv) Ar
   (a) 42' x 36'. (b) 30' x 18'. (v) 6' all round the net plot. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) Slight attack of boll-worm; 10% damage found. (iii) Seed cotton yield. (iv) (a) 1952-1953.
   (b) No. (c) N.A. (v) (a) Amralli, and Surat. (b) N.A. (vi) Nil. (vii) Originally it was laid out with 6 replications but replication No. 4 was omitted because of very low yield, hence only 5 replications.

5. RESULTS:
   (i) 245 lb/acre.
   (ii) 56.63 lb/acre.
   (iii) Main effect of N alone is highly significant.
   (iv) Av. yield of kapas in lb/acre.

<table>
<thead>
<tr>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₀</td>
<td>353</td>
<td>189</td>
<td>191</td>
</tr>
<tr>
<td>C₁</td>
<td>345</td>
<td>253</td>
<td>143</td>
</tr>
<tr>
<td>C₂</td>
<td>343</td>
<td>259</td>
<td>132</td>
</tr>
<tr>
<td>Mean</td>
<td>347</td>
<td>233</td>
<td>135</td>
</tr>
</tbody>
</table>

S.E. of any marginal mean = 15.20 lb/acre.
S.E. of body of table = 25.28 lb/acre.

Crop: Cotton (Kharif).

Object: To study the optimum requirements of N for Cotton.

1. BASAL CONDITIONS:
   (i) Cotton-Jowar. (ii) Jowar. (c) Nil. (d) Black cotton soil. (e) Refer soil analysis, Surat.
   (iii) 24.6.1953. (iv) 2-3 hareenings. (b) Dibbled. (c) N.A. (d) 6' x 3". (e) 1 seed/dibble. (v) Nil.
   (vi) Fajar 2607. (vii) Unirrigated. (viii) 1 thinning, 1 weeding and 6 interculturalings. (ix) 58°. (x) 7 to 5.3.1955.

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 3 levels of A/S: N₀ = 0, N₁ = 2 and N₂ = 4 cwt/ac. of A/S.
   (2) 3 levels of cellulose matter: C₀ = C₁ = 2 and C₂ = 5 tons/ac.
3. DESIGN:
(i) 3 X 3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 42 x 30'. (b) 30 x 15'. (v) 6' round the net plot. (vi) Yes.

4. GENERAL:
(i) Good. Stand was good without lodging. (ii) Nil. (iii) Kupas yield. (iv) (a) 1951—1955. (b) No. (c) N.A. (v) (a) Amreli. (b) N.A. (vi) 46° out of 58° rainfall occurred in July and August against the average of 42°. (vii) N.A.

5. RESULTS:
(i) 640 lb./ac.
(ii) 49.19 lb./ac.
(iii) All effects are significant.
(iv) Av. yield of kudar in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₀</td>
<td>557</td>
<td>687</td>
<td>845</td>
<td>696</td>
</tr>
<tr>
<td>C₁</td>
<td>519</td>
<td>636</td>
<td>731</td>
<td>629</td>
</tr>
<tr>
<td>C₂</td>
<td>532</td>
<td>603</td>
<td>651</td>
<td>595</td>
</tr>
</tbody>
</table>

S.E. of any marginal mean =1.60 lb./ac.
S.E. of body of table =20.14 lb./ac.

Crop :- Cotton (Kharif).
Object:- To find the optimum dose of N to Cotton crop.

Ref. :-Gj. 51(30).
Type :- 'M'.

BASAL CONDITIONS:
(i) (a) Jowar—Cotton. (b) Jowar. (c) Nil. (d) (a) Black cotton soil. (b) Refer soil analysis, Surat.
(ii) 28.6.1951. (iv) (a) 2 harrowings. (b) Dibbling. (c) N.A. (d) 5 x 3". (e) 1 seed/dibble. (v) Nil.
(vi) 170-C.0.2 Desi Raj. (vii) Unirrigated. (viii) 1 interculturing, 1 weeding and 1 thinning. (ix) 5, 28.1.1952 and 10.2.1952.

2. TREATMENTS:
1. Control (no manure).
2. 20 C.L./ac. of F.Y.M.
3. 10 C.L./ac. of F.Y.M.+5 lb./ac. of N as A/S (coating to seed)+20 lb./ac. of N as manure mixture top dressed.
4. 10 C.L./ac. of F.Y.M.+5 lb./ac. of N as A/S (coating to surface)+20 lb./ac. of N as manure mixture top dressed.
5. 50 lb./ac. of N as manure mixture.
6. 10 C.L./ac. of F.Y.M.+2 lb./ac. of N as manure mixture top dressed.

3. DESIGN:
(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 72 x 15'. (b) 69 x 5'. (v) 14' x 5'. (vi) Yes.

4. GENERAL:
(i) Below normal. (ii) Nil. (iii) Cotton seed yield. (iv) (a) 1951—1955 (modified in 1952). (b) No. (c) N.A. (d) Nil. (e) N.A. (f) Unfavourable season with low rains. (vii) Nil.

5. RESULTS:
(i) 368.4 lb./ac.
(ii) 76.71 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>348.8</td>
</tr>
<tr>
<td>2.</td>
<td>359.0</td>
</tr>
<tr>
<td>3.</td>
<td>375.6</td>
</tr>
<tr>
<td>4.</td>
<td>341.9</td>
</tr>
<tr>
<td>5.</td>
<td>416.9</td>
</tr>
<tr>
<td>6.</td>
<td>368.3</td>
</tr>
</tbody>
</table>

S.E./mean = 38.35 lb./ac.

Crop : Cotton (Kharif).


Object: To study the optimum dose of N and P2O5 along with spacings on the yield of Cotton.

1. BASAL CONDITIONS:
   (i) (a) Nil. (b) Goundnut (Kharif)-Whear (Ra.
   (c) N.A.
   (ii) (a) Medium black. (b) Refer soil analysis, Amreli.
   (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) As per treatments. (e) 2 weeks

2. TREATMENTS:
   Main-plot treatments: All combinations of (1) and (2)
   (1) 3 levels of N as A/S:
       N0 =0, N1 =30 and N2 =60 lb./ac.
       (2) 3 levels of P2O5 as Super:
       P0 =0, P1 =30 and P2 =60 lb./ac.
   Sub-plot treatments:
   3 spacings: S1 =12" x 9", S2 =18" x 9" and S3 =24" x 9".

3. DESIGN:
   (i) Split-plot. (ii) (a) 9 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 63' x 15'
   for 12" and 24" spacing and 63' x 15' for 18" spacing. (b) 63' x 12'. (v) N.A. (vi) Yes.

4. GENERAL:
   (i) N.A. (ii) Nil. (iii) Kapas yield. (iv) (a) 1952-1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi)
   and (vii) Nil.

5. RESULTS:
   (i) 275 lb./ac.
   (ii) (a) 73.81 lb./ac.
   (b) 52.18 lb./ac.
   (iii) None of the effects is significant.
   (iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th>N0</th>
<th>N1</th>
<th>N2</th>
<th>Mean</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>271</td>
<td>290</td>
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<td>285</td>
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<td>296</td>
<td>280</td>
<td>289</td>
<td>275</td>
<td>281</td>
<td>286</td>
<td>276</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. N or P margiral means = 17.30 lb./ac.
2. S marginal means = 17.30 lb./ac.
3. S means at the same level of N or P = 21.30 lb./ac.
4. N or P means at the same level of S = 24.60 lb./ac.
Crop:- Cotton (Kharif).

Object: - To study the optimum dose of N and P₂O₅ along with spacings on the yield of Cotton.

1. BASAL CONDITIONS:
(i) (a) No. (b) Groundnut and Wheat. (c) Nil. (ii) (a) Medium black cotton. (b) Refer soil analysis, Amreli. (iii) 26 to 29.6.1953. (iv) (a) Harrowing twice, ploughing once and levelling once. (b) Dibbling. (c) 15 to 20 lb./ac. (d) As per treatments. (e) 3 to 5 seeds/hole. (v) 5 C.L./ac. of F.Y.M before preparatory tillage. (vi) Pratap (medium). (vii) Unirrigated. (viii) 3—4 interculturings and weedicings. (ix) 34.25°. (x) 20.10.1953 ; 9.11.1953 ; 15.12.1953 ; 7, 25.1.1954.

2. TREATMENTS:
Main-plot treatments:
All combinations of (1) and (2)
(1) 3 levels of N as A/S: N₀=0, N₁=30 and N₂=60 lb./ac.
(2) 3 levels of P₂O₅ as Super: P₀=0, P₁=30 and P₂=60 lb./ac.
Sub-plot treatments:
3 spacings: S₁=12'x9', S₂=18'x9'' and S₃=24'x9''

3. DESIGN:
(i) Split-plot. (ii) (a) 9 main-plots/block and 3 sub-plots/main-plot. (iii) 4. (iv) (a) 63'x16' for 12' and 24' spacing; 63'x15'' for 18' spacing. (b) 63'x12'. (v) One row on either side and 1.5' at each end to be left for 18' and 24' treatments and two rows on either side and 1.5' at each end for 12' spacing to be left as non-experimental areas. (vi) Yes.

4. GENERAL:
(i) Good. (ii) Nil. (iii) Kapas yield. (iv) (a) 1952—1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 211 lb./ac.
(ii) (a) 104.9 lb./ac.
(b) 58.8 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>Mean</th>
<th>S₁</th>
<th>S₂</th>
<th>S₃</th>
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<td>198</td>
<td>198</td>
<td>211</td>
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<td>P₁</td>
<td>212</td>
<td>207</td>
<td>231</td>
<td>214</td>
<td>222</td>
<td>224</td>
<td>195</td>
</tr>
<tr>
<td>P₂</td>
<td>193</td>
<td>201</td>
<td>273</td>
<td>222</td>
<td>212</td>
<td>229</td>
<td>225</td>
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<tr>
<td>Mean</td>
<td>192</td>
<td>211</td>
<td>231</td>
<td>211</td>
<td>215</td>
<td>220</td>
<td>199</td>
</tr>
</tbody>
</table>
Crop: Cotton (Kharif).

Ref: Gj. 48(109).
Type: "CM".

Object: To study the residual effect of Cotton grown with chinamug on succeeding crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) Cotton, Chinamug-Jowar. (b) N.A. (c) N.A. (d) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.7.1948. (iv) (a) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) N.A. (x) 12.4.1949.

2. TREATMENTS:
   1. Cotton to be followed by Jowar next year.
   2. Cotton with intercropping of Chinamug to be followed by Jowar.
   3. Cotton with intercropping of Chinamug (super at 50 lb./ac. of P₂O₅ applied to Chinamug) to be followed by Jowar.

3. DESIGN:
   (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36' x 62'. (b) 24' x 50'. (v) 6' between. (vi) Yes.

4. GENERAL:
   (i) N.A. (ii) N.A. (iii) Seed cotton yield. (iv) (a) 1948-1951. (b) Nil. (c) Nil. (v) (a) N.A. (vi) N.A. (vii) Nil. (viii) The intercrop chinamug did not thrive for want of rain and hence the yield of chinamug not recorded.

5. RESULTS:
   (i) 234 lb./ac.
   (ii) 23.28 lb./ac.
   (iii) Treatments do not differ significantly.
   (iv) Av. yield of kapas in lb./ac.
      Treatment  Av. yield
      1.        234
      2.        226
      3.        243
      S.E./mean = 8.23 lb./ac.

Crop: Cotton (Kharif).

Ref: Gj. 49(137)
Type: "CM".

Object: To study the residual effect of Cotton grown with Chinamug on succeeding crop Jowar.

1. BASAL CONDITIONS:
   (i) (a) Cotton, Chinamug-Jowar. (b) Jowar. (c) Nil. (d) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 9.7.1948. (iv) (a) N.A. (b) Thbbing. (c) N.A. (d) N.A. (e) N.A. (f) 5 C.L./ac. of F.Y.M. (v) N.A. (vi) N.A. (vii) 2 intercrautings, 1 thinning and 1 weeding. (ix) 45-2'. (x) 9.4.1953.

2. TREATMENTS:
   1. Cotton to be followed by Jowar next year.
   2. Cotton with intercropping of Chinamug to be followed by Jowar.
   3. Cotton with intercropping of Chinamug (super at 50 lb./ac. of P₂O₅ applied to Chinamug) to be followed by Jowar.

3. DESIGN:
   (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36' x 62'. (b) 24' x 50'. (v) 5' around. (vi) Yea.

4. GENERAL:
   (i) Due to heavy rains, crop growth was stunted. (ii) Heavy attack of leaf eating caterpillars and pod borers in Chinamug due to which crop failed. (iii) Seed cotton yield. (iv) (a) 1948-1951. (b) Nil. (c) Nil. (d) (a) and (b) N.A. (vii) The intercrop Chinamug completely failed.
5. RESULTS:
(i) 615 lb./ac.
(ii) 79.13 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>602</td>
</tr>
<tr>
<td>2</td>
<td>581</td>
</tr>
<tr>
<td>3</td>
<td>603</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>±27.98 lb./ac.</td>
</tr>
</tbody>
</table>

CROP: Cotton. (Kharif).
Object: To study the residual effect of Cotton grown with Chinamug on succeeding crop Jowar.

1. BASAL CONDITIONS:
(i) (a) Cotton, Chinamug-Jowar. (b) Jowar. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 6.7.1950. (iv) (a) 3 harrowings. (b) Dibbled. (c) N.A. (d) 6'×2'. (e) N.A. (v) 5 C L/ac. of P₂O₅ spread on 29.5.1950. (vi) Suyog (vii) Unirrigated. (viii) 2 weedings, 2 thinnings & 3 interculturings (ix) 29.40° x 10.1.1951 & 26.3.1951.

2. TREATMENTS:
1. Cotton to be followed by Jowar next year.
2. Cotton with intercropping of Chinamug to be followed by Jowar.
3. Cotton with intercropping of Chinamug (super applied to Chinamug at 50 lb./ac. of P₂O₅) to be followed by Jowar.

3. DESIGN:
(j) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36'×62'. (b) 24'×50'. (v) 6'. around (vi) Yes.

4. GENERAL:
(i) Normal growth for cotton. (ii) Chinamug was heavily attacked by insects and also at the time of pod formation, attack of rats spoiled most of the pods. (iii) Seed cotton yield. (iv) (a) 1948—1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Chinamug crop failed.

RESULTS:
(i) 530 lb./ac.
(ii) 38.50 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
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<tbody>
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<td>2</td>
<td>530</td>
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<tr>
<td>3</td>
<td>516</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>±13.77 lb./ac.</td>
</tr>
</tbody>
</table>

CROP: Cotton. (Kharif).
Object: To find the optimum dose of manures to Cotton crop with suitable spacing.
2. TREATMENTS:

Main plot treatments:
6 doses of manure: M₀ = Control (no manure), M₁ = 20 C.L./ac. of F.Y.M, M₂ = 10 C.L./ac. of F.Y.M, M₃ = 10 C.L./ac. of F.Y.M, + 5 lb./ac. of N as A/S coating of seed, M₄ = 10 C.L./ac. of F.Y.M, + 5 lb./ac. of N as A/S coating to surface + 10 lb./ac. of N as manure mixture top dressing, M₅ = 50 lb./ac. of N as manure mixture and M₆ = F.Y.M + 2 lb./ac. of N as manure mixture top dressing.

Sub-plot treatments:
2 spacings: S₁ = 5' x 2' and S₂ = 5' x 3'.

3. DESIGN:
(i) Split-plot. (ii) 6 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (a) Main plot: 4' x 15'. Sub-plot: 4' x 15'. (b) 30' x 3'. (v) One row on either side, 3' at each end. (vi) Yes, in main-plots; in sub-plots treatments not randomised.

4. GENERAL:
(i) Below normal. (ii) Nil. (iii) Seed cotton yield. (iv) (a) 1951 to 1955 (modified in 1952.) (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 450.2 lb./ac.
(ii) (a) 145.8 lb./ac.
(b) 83.4 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>M₀</th>
<th>M₁</th>
<th>M₂</th>
<th>M₃</th>
<th>M₄</th>
<th>M₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>S₁</td>
<td>415.5</td>
<td>447.2</td>
<td>502.2</td>
<td>461.3</td>
<td>555.7</td>
<td>444.7</td>
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<tr>
<td>S₂</td>
<td>325.2</td>
<td>666.5</td>
<td>340.3</td>
<td>397.8</td>
<td>409.9</td>
<td>358.5</td>
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<tr>
<td>Mean</td>
<td>405.4</td>
<td>555.8</td>
<td>421.2</td>
<td>429.6</td>
<td>487.8</td>
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<td></td>
<td></td>
<td>452.2</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. M marginal means: -72.88 lb./ac.
2. S marginal means: -24.06 lb./ac.
3. S means at the same level of M: -58.98 lb./ac.
4. M means at the same level of S: -83.98 lb./ac.

Crop :- Cotton (Kharif)
Object :- To find out the optimum dose of manure to Cotton crop with suitable spacing.

Ref :- Gj 53(140).
Type :- 'M'.
3. DESIGN:
(i) Split-plot. (ii) (a) 6 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iii) 4, (iv) (a) Sub-plot: 42'x15'; main-plot: 84'x15'. (b) 30'x5'. (v) One row on either side, 3' at either end. (vi) Yes.

4. GENERAL:
(i) Good. ii) Crop attacked by thrips. No control measures taken. (iii) Seed cotton yield (iv) (a) 1951 to 1955. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 745.7 lb./ac.
(ii) (a) 138.9 lb./ac.
(b) 116.6 lb./ac.
(iii) Main effect of M, S are significant. Interaction M x S is not significant.
(iv) Av. yield of 'kapar' in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>M₀</th>
<th>M₁</th>
<th>M₂</th>
<th>M₃</th>
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<td>836.4</td>
<td>889.4</td>
<td>870.0</td>
<td>795.0</td>
<td>796.0</td>
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<tr>
<td>S₂</td>
<td>314.6</td>
<td>633.7</td>
<td>798.6</td>
<td>875.7</td>
<td>774.4</td>
<td>773.0</td>
<td>695.5</td>
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<tr>
<td>Mean</td>
<td>449.2</td>
<td>717.6</td>
<td>817.5</td>
<td>882.5</td>
<td>823.7</td>
<td>704.0</td>
<td>745.7</td>
</tr>
</tbody>
</table>

S E. of difference of two
1. M marginal means = 69.44 lb./ac.
2. S marginal means = 33.67 lb./ac.
3. S means at the same level of M = 82.48 lb./ac.
4. M means at the same level of S = 85.30 lb./ac.

Crop :- Groundnut.
Ref :- Gj. 49(85).
Type :- 'M'.

Object :- To study the effect of organic manures on the yield of Groundnut.

1. BASAL CONDITIONS:
(i) (a) No. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 19.7.1949. (iv) (a) One ploughing and 3 harrowings. (b) Drilled. (c) 40 lb./ac. (d) Between rows 18"; between plants-irregular. (e) N.A. (v) Nil. (vi) A.H.32. (vii) Unirrigated. (viii) 2 weedings and 2 interculturings. (ix) 13.75'. (x) 31.10.1949.

2. TREATMENTS:
1. Control (no manuring).
2. 7 C.L./ac. of Compost.
3. 7 C.L./ac. of Poudrette Compost.
4. 7 C.L./ac. of F.Y.M.

Manures applied at sowing.

3. DESIGN:
(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 44'x30'. (b) 40'x24'. (v) 2'x3'. (vi) Yes.

4. GENERAL:
(i) Inspite of insufficient rains in the month of August the crop did not suffer much, the general growth was normal. (ii) Nil. (iii) Fed yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Nil.
S.

RESULTS:

(i) 1274 lb./ac.
(ii) 291.8 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of pod in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1078</td>
</tr>
<tr>
<td>2</td>
<td>1395</td>
</tr>
<tr>
<td>3</td>
<td>1373</td>
</tr>
<tr>
<td>4</td>
<td>1248</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>= 2.653 lb./ac.</td>
</tr>
</tbody>
</table>

Crop: Groundnut (Kharif).

Ref: Gj. 48(64).
Type: 'M'.

Object: To study the effect of Super applied to the succeeding crop Cotton.

1. BASAL CONDITIONS:
   (i) (a) N., (b) N.A. (c) N.A. (ii) (a) Medium black. (b)Refer soil analysis, Amreli. (iii) 14.8.1948 to 21.5.1948. (iv) (a) One ploughing and three harrowings. (b) Drilled. (c) 60 lb./ac. (d) Between rows 18" between plants—irregular. (e) —. (v) Nil. (vi) A.H.32. (vii) Unirrigated. (viii) 2 to 3 weedings a., 3 to 4 interculturings. (ix) 12.73". (x) N.A.

2. TREATMENTS:
   1. Groundnut without Super.
   2. Groundnut with Super at 30 lb./ac. of P,O.<

3. DESIGN:
   (i) R.B.D. (ii) 2. (b) N.A. (iii) 4. (iv) (a) 14' x 39'. (b) 39' x 21'. (v) 7' x 3'. (vi) Yes.

4. GENERAL:
   (i) The crop germinated well. For want of rain, withering was noticed. On the whole the season was normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1944—1945. (b) N.A. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) Plot wise yield data N.A.

5. RESULTS:
   (i) 1415 lb./ac.
   (ii) N.A.
   (iii) N.A.
   (iv) Av. yield of pod in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1401</td>
</tr>
<tr>
<td>2</td>
<td>1429</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>= N.A.</td>
</tr>
</tbody>
</table>

Crop: Groundnut (Kharif).

Ref: Gj. 49(84).
Type: 'N'.

Object: To study the effect of Super applied to crops (Groundnut, Udid and Bajra) on the succeeding crop Cotton with and without N.

1. BASAL CONDITIONS:
   (i) (a) No. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (d) (a) Medium black. (b) Refer soil analysis, Amreli. (ii) 19.7.1949. (iv) (a) One ploughing and 3 harrowings. (b) Drilled. (c) 60 lb./ac. (d) Between rows 18" and between plants—irregular. (e) —. (v) Nil. (vi) A.H.32. (vii) Unirrigated. (viii) 4 weedings and 2 interculturings. (ix) 13.73". (a) 26.11.1949 and 27.12.1949.
2. TREATMENTS:
1. Groundnut without Super.
2. Groundnut with Super at 30 lb./ac. of P₂O₅.

3. DESIGN:
(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 44'x30'. (b) 40'x24'. (v) 2'x3'. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1946—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi and (vii) Nil.

5. RESULTS:
(i) 1149 lb./ac.
(ii) 15.72 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of pod in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1146</td>
<td>7.86 lb./ac.</td>
</tr>
<tr>
<td>2.</td>
<td>1151</td>
<td></td>
</tr>
</tbody>
</table>

Crop: Groundnut (Kharif).
Object: To find out the effect of Boron and Manganese on Groundnut yield.

1. BASAL CONDITIONS:
(i) (a) Nil. (b) and (c) N.A. (ii) (a) Light brown. (b) Refer soil analysis, Dchad. (iii) 23.7.1953.
(iv) (a) N.A. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) Spanish No. 5. (vii) Unirrigated. (viii) NA.
(ix) 18.64'. (x) 2.11.1953 to 9.11.1953.

2. TREATMENTS:
All combinations of (1) and (2)
(1) 2 levels of Boron: B₀=0 and B₁=4 lb./ac.
(2) 2 levels of Manganese: M₀=0 and M₁=6 lb./ac.

3. DESIGN:
(i) 2x2 Fact. in R.B.D. (ii) (a) 4 (b) N.A. (iii) 2. (iv) (a) 42'x39', (b) 30'x31'. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Due to continuous rains after sowing, plots were not in good condition for any operation and hence the crop growth was hindered. (ii) Crop suffered from root-rot disease and hence damaged to the extent of 25%. (iii) Yield of pods and tops. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 750 lb./ac.
(ii) 256.0 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of pod in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>B₀</th>
<th>B₁</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>M₀</td>
<td>889</td>
<td>664</td>
<td>777</td>
</tr>
<tr>
<td>M₁</td>
<td>719</td>
<td>728</td>
<td>724</td>
</tr>
<tr>
<td>Mean</td>
<td>804</td>
<td>696</td>
<td>750</td>
</tr>
</tbody>
</table>

S.E. of any marginal mean = 128.0 lb./ac.
S.E. of body of table = 181.0 lb./ac.
Crop - Groundnut (Kharif).
Ref - Gj. 52(175).
Site - Groundnut Res. Stn., Junagadh.
Type - 'M'.

Object: To find the best combination of F.Y.M, P\textsubscript{2}O\textsubscript{5} and K\textsubscript{2}O for getting maximum yield.

1. BASAL CONDITIONS:
   (i) (a) No. (b) and (c) N.A. (iii) (a) Medium back. (b) Refer oil analysis, Junagadh. (ii) N.A. (iv) (a) 2 to 3 harrowings. (b) Dibbling (c) N.A. (d) Between rows 1 and between plants 4. (v) N. (vi) Punjab I. (spreading type). (vii) Uniform t.d. (viii) 2 to 3 intercultivations and 3 to 4 weeding.
   (ix) 24.11'. (x) N.A.

2. TREATMENTS:
   Main-plot treatments:
   - 2 levels of F.Y.M: F\textsubscript{0} = 0 and F\textsubscript{1} = 10 C L./ac.
   Sub-plot treatments:
   - All combinations of (1) and (2)
     - (i) 3 levels of P\textsubscript{2}O\textsubscript{5} as Super: P\textsubscript{0} = 0, P\textsubscript{1} = 23 and P\textsubscript{2} = 48 lb./ac.
     - (2) 3 levels of K\textsubscript{2}O as Pot. Sui.: K\textsubscript{0} = 0, K\textsubscript{1} = 27, and K\textsubscript{2} = 44 lb./ac.

3. DESIGN:
   (i) Split-plot. (ii) A. (a) 2 main-plots/blocks and 9 sub-plots/uni-plot. (b) N.A. (iii) 4. (iv) (a) 7'/x 1', (b) 6'/x 6', (c) 4'/x 2', (v) Yes.

4. GENERAL:
   (i) N.A. (ii) N.A (iii) Pod yield. (iv) (a) 1952 - cm. (b) N.A. (c) N.A. (d) A. and (b) N.A. (e) (vi) N.A.

5. RESULTS:
   (i) 1063 lb./ac.
   (ii) 153.2 lb./ac.
   (iii) 116.9 lb./ac.
   (iv) Only main effect of F is significant.
   (v) - A. yield of pod in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>F\textsubscript{0}</th>
<th>F\textsubscript{1}</th>
<th>P\textsubscript{1}</th>
<th>P\textsubscript{2}</th>
<th>Mean</th>
<th>F\textsubscript{0}</th>
<th>F\textsubscript{1}</th>
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</thead>
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<td>1030</td>
<td>104.</td>
<td>1021</td>
<td>982</td>
<td>1059</td>
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<td>1123</td>
<td>1155</td>
<td>1169</td>
<td>1099</td>
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<tr>
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<td>1162</td>
<td>1079</td>
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<td>1128</td>
<td>1145</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. F marginal means = 32.28 lb./ac.
2. P or K marginal means = 30.16 lb./ac.
3. P or K means at the same level of F = 42.45 lb./ac.
4. F means at the same level of P or K = 47.62 lb./ac.
Crop: Groundnut (Kharif).

Site: Groundnut Res. Sta., Junagadh.

Object: To find the best combination of FYM, P2O5 and K2O for getting maximum yield.

1. BASAL CONDITIONS:
   (i) (a) No. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A
   (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) Between rows—3' and between plants—4', (e)
   Onset. (vi) Nil. (vii) Punjab. L. (spreading type). (vii) Unirrigated. (viii) 2 to 3 interculturings and 3 to 4
   weedings. (ix) 50.54'. (x) N.A.

2. TREATMENTS:
   Main-plot treatments:
   2 levels of FYM: F0 = 0 and F1 = 10 C.L./ac.
   Sub-plot treatments:
   All combinations of (1) and (2)
   (1) 3 levels of P2O5 as Super: P0 = 0, P1 = 24 and P2 = 48 lb./ac.
   (2) 3 levels of K2O as Pot. Sol.: K0 = 0, K1 = 27 and K2 = 54 lb./ac.

3. DESIGN:
   (i) Split-plot. (ii) (a) 2 main-plots/block and 9 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 75'x10', (b)
   66'x6'. (v) 4'x2'. (vi) Yes.

4. GENERAL:
   (i) N.A. (ii) N.A. (iii) Pod yield. (iv) (a) 1952—contd. (modified in 1955-56). (b) No. (c) N.A.
   (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 1083 lb./ac.
   (ii) (a) 409.9 lb./ac.
   (b) 192.1 lb./ac.
   (iii) Main effect of F is highly significant; main effect of P and interactions P x K and P x F are significant.
   Others are not significant.
   (iv) Av. yield of pod in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>F0</th>
<th>F1</th>
<th>Mean</th>
</tr>
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Mean: 1083

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<tr>
<td>F1</td>
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</table>

S.E. of difference of two
1. F marginal means = 78.87 lb./ac.
2. P or K marginal means = 45.26 lb./ac.
3. P or K means at the same level of P = 14.4 lb./ac.
4. F means at the same level of P or K = 94.60 lb./ac.

Crop: Groundnut (Kharif).


Object: To determine the economic seed rate and spacing of plants to get maximum yield.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) Bajra. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Deesa. (iii) 27.6.155.
   (iv) (a) N.A. (b) Dibbling. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) Spanish pearlet.
   (vii) Unirrigated. (viii) 1 interculturings. (ix) N.A. (x) 9 to 12.11.1953.
2. TREATMENTS:

Main-plot treatments:
3 spacings between rows: \( S_1 = 12" \), \( S_2 = 15" \) and \( S_3 = 18" \).

Sub-plot treatments:
3 seed rates: \( R_1 = 60 \), \( R_2 = 80 \) and \( R_3 = 100 \) lb./ac.

3. DESIGN:

(i) Split-plot. (ii) 3 main-plots/block and 3 sub-plots/main-plot. (iii) N.A. (iv) 36' x 21' for 12' and 18' spacing and 30' x 22.5' for 15' spacing. (v) Ring around the net plot for 12" and 18" spacing. (vi) N.A. (vii) N.A. (viii) N.A.

4. GENERAL:

(i) Germination was good. Growth and pod formation was affected by certain bugs. (ii) Crop was affected by lizards. No control measures taken. (iii) Plant yield under (a) 12' = 95 lbs, (b) N.A. (c) N.A. (d) N.A. (e) N.A. (f) N.A. (g) N.A. (h) N.A. (i) N.A. (j) N.A.

5. RESULTS:

(i) 611 lb/acre.
(ii) 117.1 lb/acre.
(iii) 70.4 lb/acre.
(iv) R effect is highly significant. S effect and interaction S x R are significant.
(v) Av. yield of pod in lb/acre.

<table>
<thead>
<tr>
<th>S1</th>
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<th>S3</th>
<th>Mean</th>
</tr>
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<td>468</td>
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<tr>
<td>R3</td>
<td>734</td>
<td>855</td>
<td>710</td>
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S.E. of difference of two
1. S marginal means
2. R marginal means
3. R means at the same level of S
4. S means at the same level of R

Mean 583 672 578 576

S.E. of difference of two
1. S marginal means
2. R marginal means
3. R means at the same level of S
4. S means at the same level of R

Crop : Groundnut (Kharif).

Object: To find out the optimum spacing and seed rate for getting maximum yield.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Maize, (c) N.A. (ii) (a) Medium brown. (b) Raised soil analysis, Dohad. (iii) 2\%, 29.6.1952. (iv) (a) N.A. (b) By plough. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./acre of F.Y.M. on 11.6.1952. (vi) Spanish.5 (erect type). (vii) Unirrigated. (viii) Hand weeding during the second week of August. Interculturing by a country plough on 24.8.1952. (x) 31.07". (x) 27.10.1952 to 2.11.1952.

2. TREATMENTS:

Main-plot treatments:
3 spacings between rows: \( S_1 = 12" \), \( S_2 = 15" \) and \( S_3 = 18" \).

Sub-plot treatments:
3 seed rates: \( R_1 = 80 \), \( R_2 = 100 \) and \( R_3 = 120 \) lb./ac.

3. DESIGN:

(i) Split-plot. (ii) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) N.A. (iv) 36' x 15' (b) 30' x 9' for 12", 18" and 27' x 10' for 15" spacings respectively. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A.
4. GENERAL:

(i) The germination was gappy and the stand of the crop was uneven. The crop suffered due to continuous and heavy rains from the second week of July to 2nd week of August. (ii) *Katra* was found on groundnut but did not come out with any significant damage. (iii) Pod yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Deesa. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1104 lb./ac.
(ii) (a) 381.3 lb./ac.
(b) 362.7 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of pod in lb./ac.

<table>
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<tr>
<th>S1</th>
<th>S2</th>
<th>S3</th>
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</tr>
<tr>
<td>1218</td>
<td>1141</td>
<td>1085</td>
<td>1148</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. S marginal means = 127.1 lb./ac.
2. R marginal means = 120.9 lb./ac.
3. R means at the same level of S = 209.3 lb./ac.
4. S means at the same level of R = 212.9 lb./ac.

---

**Crop:** Groundnut (*Khraif*).
**Site:** Agri. Res. Stn., Dohad.

Object: To find out the optimum spacing and seed rate for getting maximum yield.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Fallow. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium brown. (b) Refer soil analysis, Dohad. (ii) 25, 26.7.1953. (iv) (a) N.A. (b) By plough. (c) and (d) As per treatments. (c) N.A. (v) 5 C.L./ac. of F.Y.M. during the second week of June 1953. (vi) Spanish-5 (erect type). (vii) Unirrigated. (viii) Interculturing by plough on 30.8.1953 and hand weeding on 31.8.1953. (ix) 19.05°. (x) 22 to 27.10.1953.

2. TREATMENTS:

Main-plot treatments:
3 spacings between rows : $S_1=12\text{"}$, $S_2=15\text{"}$ and $S_3=18\text{"}$.

Sub-plot treatments:
3 seed rates: $R_1=80$, $R_2=100$ and $R_3=120$ lb./ac.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) $36\times21\text{"}$, $36\times22.5\text{"}$ and $35\times24\text{"}$ for $12\text{"}$, $15\text{"}$ and $18\text{"}$ spacings respectively. (b) $30\times15\text{"}$. (v) 3 rows on either side and 3' at either end of the net plot. (vi) Yes.

4. GENERAL:

(i) The germination of the crop was satisfactory. The total rainfall for this year was only half the annual average rainfall. However the distribution of the rainfall was not so bad, hence the crop did not suffer much. (ii) *Tikka* disease was noticed in later stage; no control measures were taken. (iii) Pod yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Deesa. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 982 lb./ac.
(ii) (a) 199.8 lb./ac.
(b) 180.0 lb./ac.
(iii) None of the effects is significant.
Crop : Groundnut (Kharif).
Object : To determine the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS :
   (i) (a) N.A. (b) N.A. (c) N.A. (ii) Medium soil. (iii) Refer soil analysis, Junagadh.
   (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments.
   (e) Trial. (f) 3 C.L. ac. of FYM applied in furrows 15 days before sowing.
   (vi) Purjaks—1 spreading type. (vii) Irrigated. (viii) 2-3 interculturings and 3 to 4 weedings.
   (ix) 24-15°. (10) N.A.

2. TREATMENTS :
   All combinations of (1 and 2).
   (1) 2 spacings between rows : \( S_1 = 2' \) and \( S_2 = 3' \).
   (2) 3 spacings between plants : \( S_1 = 2' \), \( S_2 = 3' \), \( S_3 = 4' \), \( S_4 = 6' \).

3. DESIGN :
   (i) 3 x 2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 50' x 12'. (b) 4'
   (c) Y'ing round the net plot. (v) Yes.

4. GENERAL :
   (i) The germination and growth was normal. (ii) Tikka and aphids; damage was negligible; no control
   measures taken. (iii) Pod yield. (iv) (a) 1951-1957 (b) 1957-58. (b) N.A. (v) (a) N.A.
   (b) N.A. (vi) Nil. (vii) The experiment was vitiated in 1971-72 owing to low rainfall.

5. RESULTS:
   (i) 978 lb/ac.
   (ii) 108.2 lb/ac.
   (iii) Only main effect of ‘row spacings’ is highly significant.
   (iv) \( \text{Av. yield of pod in lb/acre} \),

<table>
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<tr>
<th></th>
<th>( S_1 )</th>
<th>( S_2 )</th>
<th>( S_3 )</th>
<th>( S_4 )</th>
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<td>926</td>
<td>925</td>
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<td>1084</td>
<td>1084</td>
<td>1028</td>
<td>1065</td>
<td>1053</td>
</tr>
</tbody>
</table>

Meangaben: 982

S.E. of marginal mean of row spacing = 25.50 lb/acre.
S.E. of marginal mean of plant spacing = 33.23 lb/acre.
S.E. of body of table = 44.77 lb/acre.
Crop :- Groundnut (Kharif).

Site :- Groundnut Res. Stn., Junagadh.

Object :- To determine the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A.
   (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) One. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Punjab-1 spreading type. (vii) Unirrigated. (viii) 2-3 interculturings and 3 to 4 weedings. (ix) 50.54". (x) N.A.

2. TREATMENTS:
   All combinations of (1) and (2)
   (1) 2 row spacings: $S_1 = 2'$ and $S_2 = 3'$.
   (2) 3 plant spacings: $S_3 = 2'$, $S_4 = 4'$ and $S_5 = 6'$.

3. DESIGN:
   (i) 3 x 2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 50' x 12'. (b) 44' x 6'. (v) 3' ring round the net plot. (vi) Yes.

4. GENERAL:
   (i) N.A. (ii) N.A. (iii) Yield of pods and tops. (iv) (a) 1951-1957 (modiEed in 1957-1958). (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
   (i) 1495 lb./ac.
   (ii) 155.7 lb./ac.
   (iii) 'Row spacing' effect and 'plant spacing' effect are highly significant. Interaction is not significant.
   (iv) Av. yield of pod in lb./ac.

<table>
<thead>
<tr>
<th>$S_1$</th>
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<td>1774</td>
<td>1492</td>
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<tr>
<td>1097</td>
<td>1605</td>
<td>1351</td>
</tr>
<tr>
<td>Mean</td>
<td>1216</td>
<td>1773</td>
</tr>
</tbody>
</table>

S.E. of marginal mean of row spacing = 36.70 lb./ac.
S.E. of marginal mean of plant spacing = 44.95 lb./ac.
S.E. of body of table = 63.57 lb./ac.

---

Crop :- Groundnut.


Object :- To find out the optimum spacing for two different varieties of Groundnut.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 14.8.1948 to 21.8.1948. (iv) (a) 1 ploughing and three harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) As per treatments. (vii) Unirrigated. (viii) 2 to 3 weedings. 3 to 4 interculturings. (ix) 12.73". (x) N.A.

2. TREATMENTS:
   1. A-H-32 with spacing 18" x 6'
   2. A-H-334 with spacing 18" x 6'.
   3. A-H-334 with spacing 18" x 9'.

3. DESIGN:
   (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) N.A. (v) N.A. (vi) Yes.
4. GENERAL:
(i) The germination was good. The general growth was normal. The season was also normal.
(ii) Nil.
(iii) Pod and fodder yield. (iv) (a) 1947--1949. (b) N.a. (v) (a) No. (b) N.a. (vi) Nil. (vii) Plotwise yield data was N.A., hence could not be analysed.

5. RESULTS:
(i) 1186 lb./ac.
(ii) N.A.
(iii) N.A.
(iv) Av. yield of pod in lb./ac.

<table>
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<tr>
<th>Treatment</th>
<th>Av. yield</th>
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<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<td>3.</td>
<td>1235</td>
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<tr>
<td>S.E./mean</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

Crop :- Groundnut (Kharif),
Type :- ‘CV’

Object :- To find out the optimum spacing for the two varieties of Groundnut.

1. BASAL CONDITIONS:
(ii) (a) N.A. (b) Paddy in Kharif and wheat in Rabi. c) 2.5 C.L. of F.Y.M.
(iii) Medium black.
(iv) Ref :- Gj. 49(83).
Type :- cv. a) Medium black.

2. TREATMENTS:
1. A-H-32 with spacings 18”x6”.
2. A-H-334 with spacings 18”x6”.
3. A-H-334 with spacings 18”x9”.

3. DESIGN:
(i) R.B.D. (ii) 3. (b) N.A. (iii) 8. (iv) (a) 190°x4.5°. (v) 180°x4.5°. (vi) N.A. (vii) Yes.

4. GENERAL:
(i) The variety A.H. 334 suffered due to the absence of late rains. (ii) Ticks disease; no considerable damage. (iii) Pod yield. (iv) (a) 1947--1949. (b) N.a. (c) N.A. (v) (a) No (b) N.A. (vi) and (vii) Nil.

5. RESULTS:
(i) 1413 lb./ac.
(ii) 1213 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of pod in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<tr>
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<td>3.</td>
<td>1230</td>
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<tr>
<td>S.E./mean</td>
<td>42.9 lb./ac.</td>
</tr>
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</table>

Crop :- Chickoo.
Site :- Fruit Res. Stn., Gandevi.
Type :- ‘CM’.

Object :- To study the different root stocks used for propagating Chickoo in combination with manures.

1. BASAL CONDITIONS:
(i) N.A.
2. TREATMENTS:

Main-plot treatments:
All combinations of (1), (2) and (3)
(I) 2 levels of N as A/S: N₀=0 and N₁=3 lb./tree in January, 1948+1.5 lb./tree in December, 1948.
(2) 2 levels of P₂O₅ as Super P₁₀ =0 and P₁ =3 lb./tree in January, 1948+1.5 lb./tree in December, 1948.
(3) 2 levels of K₂O as Pot. Sul.: K₀=0 and K₁=1.5 lb./tree in January, 1948+0.8 lb./tree in December, 1948.

Sub-plot treatments:
3 root stocks: R₁=Chickoo on Gootie, R₂=Chickoo on Chickoo and R₃=Chickoo on Rayon.

3. DESIGN:
(i) Split-plot. (ii) (a) 8 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Ni (iii) Height, girth, weight and no. of Chickoo. (iv) (a) 1942—contd. (b) N.A. (v) N.A. (vi) Nil.

5. RESULTS:
(i) 60 lb./tree
(ii) (a) 19.73 lb./tree.
(b) 20.45 lb./tree.
(iii) Mean
(iv) Av. yield of Chickoo in lb./tree.

<table>
<thead>
<tr>
<th></th>
<th>R₁</th>
<th>R₂</th>
<th>R₃</th>
<th>Mean</th>
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<th>K₁</th>
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<td>60</td>
<td>57</td>
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</table>

S.E. of difference of two
1. N or P or K marginal means
2. R marginal means
3. R means at the same level of N or P or K
4. N or P or K means at the same level of R

Crop :- Chickoo.  
Site :- Fruit Res. Stn., Gandevi.  
Ref :- Gj. 49(114).  
Type :- ‘CM’.

Object :- To study the different root stocks used for propagating Chickoo in combination with manures.

1. BASAL CONDITIONS:

2. TREATMENTS:
Main-plot treatments:
All combinations of (1), (2) and (3)
(I) 2 levels of N as A/S: N₀=0 and N₁=3 lb./tree in January, 1949+1.75 lb./tree in December, 1949.
(2) 2 levels of P₂O₅ as Super : P₀=0 and P₁ =3 lb./tree in Jan., 1949+1.75 lb./tree in December, 1949.
(3) 2 levels of K₂O as Pot. Sul.: K₀=0 and K₁=1.4 lb./tree in Jan., 1949+0.7 lb./tree in December, 1949.

Sub-plot treatments:
3 root stocks: R₁=Chickoo on Gootie, R₄=Chickoo on Chickoo and R₃=Chickoo on Rayon.

Object :- To study the different root stocks used for propagating Chickoo in combination with manures.
3. DESIGN:
(i) Split-plot. (ii) 8 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (ii) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL:
(i) Norm 1. (ii) Nil. (iii) Height, Girth, wt. of Chickoo, and age of Chickoo. (iv) Ar. 1943—contd. (b) N.A. (v) N.A. (vi) n.

5. RESULTS:
(i) 65 lb/tree. (ii) 39.45 lb/tree. (iii) 29.37 lb/tree.
(iv) Main effects of R and interaction 'PK' are highly significant. Other effects are not significant.
(v) Av. yield of Chickoo in lb/tree.

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>K</th>
<th>P</th>
<th>Mean</th>
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<td>86</td>
<td>86</td>
<td>86</td>
</tr>
<tr>
<td>P1</td>
<td>86</td>
<td>86</td>
<td>86</td>
<td>86</td>
</tr>
<tr>
<td>P2</td>
<td>86</td>
<td>86</td>
<td>86</td>
<td>86</td>
</tr>
<tr>
<td>Mean</td>
<td>95</td>
<td>88</td>
<td>83</td>
<td>86</td>
</tr>
</tbody>
</table>

Note: Manures are not applied this year. Residual effect of manures applied in last year was studied.

Object: To study the different root stocks used for propagating Chickoo in combination with manures.

1. BASAL CONDITIONS:

2. TREATMENTS:
Main-plot treatments:
All combinations of (1), (2) and (3)
(1) 2 levels of N as A/S: N_2 = 0 and N_1 = 3.5 lb/tree in Jan., 1949; 1.71 lb/tree in Dec., 1949.
(2) 2 levels of P_2O_5 as Super: P_2 = 0 and P_1 = 3.5 lb/tree in Jan., 1943; 1.71 lb/tree in Dec., 1949.
(2) 2 levels of K_2O as Pot. Sul.: K_2 = 0 and K_1 = 1.4 lb/tree in Jan., 1943; 0.71 lb/tree in Dec., 1949.

Sub-plot treatments:
3 root stocks: R_1 = Chickoo on Gooti, R_2 = Chickoo on Chickoo and R_3 = Chickoo on Payan.
Note: Manures are not applied this year. Residual effect of manures applied in last year was studied.

3. DESIGN:
(i) Split-plot. (ii) (a) 8 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.
4. GENERAL:
(i) Normal. (ii) Nil. (iii) Height, girth, weight and no. of chickoo. (iv) (a) 1942—contd. (b) N.A. (v) N.A. (vi) Nil.

5. RESULTS:
(i) 102 lb./tree.
(ii) (a) 51.26 lb./tree. (b) 36.23 lb./tree.
(iii) Main effect of R is highly significant and that of N is significant. Other effects are not significant.
(iv) Av. yield of chickoo in lb./tree.

<table>
<thead>
<tr>
<th></th>
<th>R₁</th>
<th>R₂</th>
<th>R₃</th>
<th>Mean</th>
<th>K₀</th>
<th>K₁</th>
<th>P₀</th>
<th>P₁</th>
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<tbody>
<tr>
<td>N₀</td>
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<td>73</td>
<td>134</td>
<td>123</td>
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<td>71</td>
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<td>115</td>
<td>93</td>
<td>123</td>
<td>124</td>
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<tr>
<td>P₀</td>
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<td>64</td>
<td>104</td>
<td>100</td>
<td>88</td>
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<tr>
<td>K₀</td>
<td>116</td>
<td>53</td>
<td>99</td>
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<tr>
<td>K₁</td>
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<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Mean</td>
<td>142</td>
<td>63</td>
<td>97</td>
<td>102</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. N or P or K marginal means = 16.53 lb./tree.
2. R marginal means = 2.91 lb./tree.
3. R means at the same level of N or P or K = 18.12 lb./tree.
4. N or P or K means at the same level of R = 20.91 lb./tree.

Crop :- Chickoo.
Site :- Fruit Res. Stn., Gandevi.
Ref :- Gj. 51(193).
Type :- 'CM'.

Object :- To study the different root stocks used for propagating Chickoo in combination with manures.

1. BASAL CONDITIONS:
(i) N.A. (ii) Refer soil analysis, Gandevi. (iii) By grafting. (iv) Kali pattı. (v) Replication I on 26.10.1942 and replication II on 14.12.1942. Spacing between plants 15' X 15' (vi) One to two years old. (vii) F.Y.M. and B.M. were given. Quantity N.A. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) 42.53'. (xii) N.A.

2. TREATMENTS:
Main-plot treatments:
All combinations of (1), (2) and (3)
(1) 2 levels of N as A/S: N₀ = 0 and N₁ = 5.5 lb./tree in Feb., 1951 and 2.25 lb./tree in Dec., 1951.
(2) 2 levels of P₂O₅ as Super: P₀ = 0 and P₁ = 5.5 lb./tree in Feb., 1951 and 2.25 lb./tree in Dec., 1951.
(3) 2 levels of K₂O as Pot. Sul.: K₀ = 0 and K₁ = 2.8 lb./tree in Feb., 1951 and 0.9 lb./tree in Dec., 1951.
Sub-plot treatments:
3 root stocks: R₁ = Chickoo on Goostie, R₂ = Chickoo on Chickoo and R₃ = Chickoo on Rayan.

3. DESIGN:
(i) Split-plot. (ii) (a) 8 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL:
(i) Normal. (ii) Nil. (iii) Height, girth, wt. of chickoo and no. of chickoo. (iv) (v) 1942—contd. (b) N.A. (vi) and (vii) Nil.
RESULTS:

(i) 133.0 lb./tree.
(ii) (a) 39.37 lb./tree. (b) 55.43 lb./tree.
(iii) Main effects of N and R and interaction P x K are highly significant. Other effects are not significant.
(iv) Av. yield of chickoo in lb./tree.

\[
\begin{array}{cccccc}
\text{Crop} & \text{Chickoo} & \text{Ref.} & \text{Gj. 52(223)} & \text{Type} & \text{CM'}.
\end{array}
\]

Site: Fruit Res. Stn., Gandevi.

Object: To study the different root stocks used for propagating Chickoo in combination with manures.

1. BASAL CONDITIONS:

(i) N.A. (ii) Refer soil analysis, Gandevi. (iii) By grafting. (iv) Kali patti. (v) Replication I. on 28.10.1942, II. on 14.12.1942 spacing between plants 15' x 15'. (vi) 1 to 2 years old. (vii) F.Y.M. and B.M. were given.


2. TREATMENTS:

Main plot treatments:

- All combinations of (1), (2) and (3)
  1. 2 levels of N as A.S: N0 = 0 and N1 = 5.0 lb./tree in Jan., 1952 and 2.5 lb./tree in Oct., 1952.
  2. 2 levels of P2O5 as Super: P0 = 0 and P1 = 5.0 lb./tree in Jan., 1952 and 2.5 lb./tree in Oct., 1952.
  3. 2 levels of K2O as Pot. Sub.: K0 = 0 and K1 = 2.0 lb./tree in Jan., 1952 and 1.0 lb./tree in Oct., 1952.

Sub-plot treatments:

- 3 root stocks: K1 = Chickoo on Gootie, R1 = Chickoo on Chickoo and R2 = Chickoo on Rayam.

3. DESIGN:

(i) Split-plot. (ii) (a) 8 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Height, girth, wt. of chickoo, and ye of chickoo. (iv) (a) 1942—contd. (b) N.A. (v) N.A. (vi) Nil.

5. RESULTS:

(i) 92.0 lb./tree.
(ii) (a) 49.25 lb./tree. (b) 53.65 lb./tree.

(iii) Main effects of N and R are highly significant. Interaction N x K and N x R are significant. Other effects are not significant.
Crop :-Chickoo.  
Site :- Fruit Res. Stn., Gandevi.  
Object :- To study the different root stocks used for propagating Chickoo in combination with manure.

1. BASAL CONDITIONS:

2. TREATMENTS:
   Main-plot treatments:
   All combinations of (1), (2) and (3)
   (1) 2 levels of N as A/S: \( N_0 = 0 \) and \( N_1 = 5.5 \) lb./tree in April, 1953 and 2.5 lb./tree in Oct., 1953.
   (2) 2 levels of \( P_2O_5 \) as Super: \( P_0 = 0 \) and \( P_1 = 5.5 \) lb./tree in April, 1953 and 2.8 lb./tree in Oct., 1953.
   (3) 2 levels of \( K_2O \) as Pot. Sul.: \( K_0 = 0 \) and \( K_1 = 2.2 \) lb./tree in April, 1953 and 1.1 lb./tree in Oct., 1953.

Sub-plot treatments:
3 root stocks: \( R_1 = \text{Chickoo on Gootie}, R_2 = \text{Chickoo on Chickoo} \) and \( R_3 = \text{Chickoo on Rayan}. \)

3. DESIGN:
   (i) Split-plot. (ii) (a) 8 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL:
   (i) Normal.  (ii) Nil.  (iii) Height, girth, and weight of chickoo.  (iv) (a) 1942-contd.  (b) N.A.  (v) Nil.  (vi) Nil.

5.1 RESULTS:
   (i) 69.0 lb./tree.
   (ii) (a) 17.35 lb./tree.
   (b) 15.57 lb./tree.
   (iii) Main effect of R and interaction N x P are highly significant. Main effect of N and interactions N x K and N x R are significant. Other effects are not significant.
(iv) Av. yield of *cuckoo* in lb/tree.

<table>
<thead>
<tr>
<th></th>
<th>R₂</th>
<th>R₁</th>
<th>R₀</th>
<th>Mean</th>
<th>K₂</th>
<th>K₁</th>
<th>P₂</th>
<th>P₁</th>
</tr>
</thead>
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<tr>
<td>N₀</td>
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<td>40.0</td>
<td>94.5</td>
<td>62.7</td>
<td>54.3</td>
<td>69.9</td>
<td>49.0</td>
<td>77.4</td>
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<tr>
<td>N₁</td>
<td>87.9</td>
<td>47.0</td>
<td>95.9</td>
<td>76.3</td>
<td>81.1</td>
<td>64.3</td>
<td>87.1</td>
<td>67.4</td>
</tr>
<tr>
<td>Mean</td>
<td>70.3</td>
<td>43.5</td>
<td>94.2</td>
<td>69.0</td>
<td>74.3</td>
<td>63.9</td>
<td>69.6</td>
<td>7.4</td>
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<tr>
<td>P₀</td>
<td>67.3</td>
<td>38.4</td>
<td>97.1</td>
<td>67.6</td>
<td>67.4</td>
<td>67.8</td>
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<tr>
<td>P₁</td>
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<td>91.3</td>
<td>71.4</td>
<td>78.5</td>
<td>64.0</td>
<td>67.8</td>
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<td>69.0</td>
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<td>67.8</td>
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<td>89.4</td>
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<td>65.9</td>
<td>65.9</td>
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<td>65.9</td>
</tr>
</tbody>
</table>

S.E. of difference of two
1. N or P or K marginal means = 5.60 lb/tree.
2. R marginal means = 5.9 lb/tree.
3. R means at the same level of N or P or K = 7.8 lb/tree.
4. N or P or K means at the same level of R = 8.68 lb/tree.

**Crop**: Bajra and Groundnut (*Kharif*).
**Site**: Agri. Res. Stn., Amrachi.

Ref: Gj. 52(289).

Object: To study the suitability of growing cereal crops along with legumes.

1. **Basal Conditions**:
   (i) (a) N.A. (b) Bajra. (c) 2 C.I., ac. of F.Y.M. (F) (a) Medium black. (b) Refer soil analysis, 'mod.'
   (ii) 5.7.1952. (a) (b) N.A. (b) Drilled. (c) N.A. (d) 6 short rows—15'. (e) N.A. (v) 1 C.I., ac. of F.Y.M.
   (vi) N.A. (vii) Untreated. (viii) 2 weeding, 2 cultivations and 1 thinning. (ix) 12.7.52. (x) 10.10.52.

2. **Treatments**:
   A. Groundnut alone.
   B. Bajra alone.
   * (i) One row of Bajra and 2 rows of Groundnut.
   (ii) One row of Bajra and 4 rows of Groundnut.
   (iii) One row of Bajra and 6 rows of Groundnut.
   (iv) One row of Bajra and 8 rows of Groundnut.
   (v) One row of Bajra and 10 rows of Groundnut.

Yields of treatment C are not available separately for different proportions of Groundnut and Bajra.

Treatments C is taken as a single treatment.

3. **Design**:
   (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) 93' × 52.5'. (v) 2' × 32.5'. (v) N.A. (vi) Yes.

4. **General**:
   (i) Normal. (ii) Nil. (iii) Grain and pod yield. (iv) 1952—cont'd. (b) N.A. (c) Nil. (d) A Nil.
   (b) N.A. (e) Nil. (vi) Prices of Groundnut and Bajra are taken from ' season and crop report' of 1952-1953, Bombay State (Table VI), Groundnut Rs. 15.50 per B.M. Bajra Rs. 12.10 per B.M.

5. **Results**:
   (i) 21.63 Rs/acre.
   (ii) 5.61 Rs/acre.
   (iii) Treatment differences are highly significant.
   (iv) Av. value of produce in Rs/acre.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. value</td>
<td>218.76</td>
<td>186.15</td>
<td>212.59</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>= 3.96 Rs/acre.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Crop: Bajra and Groundnut (Kharif).

Object: To study the suitability of growing cereal crops along with legumes.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) Bajra. (c) 2 C.I. /c. of F Y M. (i) (a) Med. thickness crack. (b) Refer soil analysis, Amreli. (iii) 26.6 1953. (iv) (a) N.A. (b) Drilled. (c) Greennut 50 lb./ac.; Bajra 10 lb./ac. (d) Between rows 18". (e) N.A. (v) Nil. (vi) Mass select. 3-4". (vii) S. H. select 39 lb./ac. Mix 3-4". (viii) S. H. select 50 lb./ac.

2. TREATMENTS:
   A. Groundnut alone.
   B. Bajra alone.
   C1. Groundnut and Bajra mixed in 10:1 ratio of rows.
   C2. Groundnut and Bajra mixed in 8:1 ratio of rows.
   C4. Groundnut and Bajra mixed in 4:1 ratio of rows.
   C5. Groundnut and Bajra mixed in 2:1 ratio of rows.

3. DESIGN:
   (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 69'x57' for A and B and 69'x13.5' for C. (b) 60'x57' for A and B and 60'x10.5' for C. (v) N.A. (vi) Yes.

4. GENERAL:
   (i) Water lodging observed. Normal. (ii) Nil. (iii) Yield data. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) F专e of E. f 6a and G。t。」 for An reli are taken from "Season and crop Report"—1953-54 Bombay State (b) Ue VI. Greennut Rs. 16.44 per B.M. Bajra Rs. 11 00 per B.M.

5. RESULTS:
   (i) 294.07 Rs./ac.
   (ii) 108.40 Rs./ac.
   (iii) Treatment differences (in terms of money value of the produce) are highly significant.
   (iv) Av. value of produce in Rs./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>A</th>
<th>B</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
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<tbody>
<tr>
<td>Av. value</td>
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<td>85</td>
<td>478</td>
<td>597</td>
<td>281</td>
<td>219</td>
<td>105</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>76.66 Rs./ac.</td>
<td></td>
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</tr>
</tbody>
</table>

Crop: Wheat and Gram (Rabi).

Object: To find out a suitable ratio of legume and cereal for mixed cropping.

1. BASAL CONDITIONS:
   (i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Med. thickness crack. (b) Refer soil analysis, Arnej. (iii) 25.10.1953.
   (iv) (a) N.A. (b) Drilled. (c) 40 lb./b.c. for wheat and 20 lb./b.c. for gram. (d) Between rows—12". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 15". (x) 26.3.1953.

2. TREATMENTS:
   1. Gram alone.
   2. Wheat alone.
   5. Gram and wheat in ratio 6:1.

3. DESIGN:
   (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 37' 35". (b) 35' 33" for 1, 2, and 7; 36' 30.5" for 3 and 6; 35' 30.1" for 4 and 5. (v) N.A. (vi) Yes.
4. GENERAL:
(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1958. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Prices of wheat and gram, for Ahmedabad Dist. taken from Season and Crop Report 1952-1953 Bombay state, farm prices of certain commodities—table VI. Wheat—Rs. 20 per Bengal maund and Gram—Rs. 22 per Bengal maund.

5. RESULTS:
(i) 10.73 Rs/ac.
(ii) 12.96 Rs/ac.
(iii) Treatment differences (in terms of money value of produce) are not significant.

Av. value of produce in Rs/ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>53.40</td>
</tr>
<tr>
<td>2.</td>
<td>105.40</td>
</tr>
<tr>
<td>3.</td>
<td>121.90</td>
</tr>
<tr>
<td>4.</td>
<td>111.80</td>
</tr>
<tr>
<td>5.</td>
<td>104.80</td>
</tr>
<tr>
<td>6.</td>
<td>124.60</td>
</tr>
<tr>
<td>7.</td>
<td>103.00</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>9.17 Rs/ac</td>
</tr>
</tbody>
</table>

Crop: Wheat and Gram /Rabi/.
Type: ‘X’.

Object: To find out suitable ratio of legume and cereal for mixed cropping.

1. BASAL CONDITIONS:
(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Annej. (iii) 25.10.1953.
(iv) (a) N.A. (b) Driill. 1. (c) 40 lb/ac. for wheat and 20 lb/ac. for gram. (d) Between rows—12”.

2. TREATMENTS:
1. Gram alone.
2. Wheat alone.

3. DESIGN:
(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 37’ x 4”. (b) 33’ x 33’ for 1, 2 and 7; 36’ x 30.5’ for 3 and 4; 33’ x 11.1 for 5 and 6. (v) N.A. (vi) Yes.

4. GENERAL:
(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1958. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Prices of Wheat and Gram for Ahmedabad district taken from “Season and Crop Report” for 1953—1954 Bombay State (table VI). Wheat Rs. 18 per Bombay maund and Gram Rs. 18 per Bombay maund.

5. RESULTS:
(i) 117.40 Rs/ac.
(ii) 29.16 Rs/ac.
(iii) Treatment differences (money value of produce) are not significant.

Av. value of produce in Rs/ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>115.80</td>
</tr>
<tr>
<td>2.</td>
<td>134.00</td>
</tr>
<tr>
<td>3.</td>
<td>126.40</td>
</tr>
<tr>
<td>4.</td>
<td>118.80</td>
</tr>
<tr>
<td>5.</td>
<td>105.20</td>
</tr>
<tr>
<td>6.</td>
<td>110.20</td>
</tr>
<tr>
<td>7.</td>
<td>111.40</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>19.92 Rs/ac</td>
</tr>
</tbody>
</table>

Crop: Wheat and Gram /Rabi/.
Type: ‘X’.

Object: To find out suitable ratio of legume and cereal for mixed cropping.
Crop: Jowar + Lang (Rabi).  
Object: To study the suitability of growing Lang as a mixture with Jowar.

1. BASAL CONDITIONS:
(i) (a) Nil. (b) Fallow. (c) Nil.  (ii) (a) Black cotton soil. (b) N.A.  (iii) Jowar on 8.9.1952 and Lang 23.9.1952, (iv) (a) N.A. (b) Drilled. (c) Lang 40 lb./ac. and Jowar 8 lb./ac. (d) 24". (e) N.A. (v) Nil.  (vi) Jowar no. 8 and Lang T-2-12.  (vii) Unirrigated. (viii) 1 thinning, 1 interculturing and 1 weeding.  (ix) 24.43".  (x) Jowar 11.2.1953 and Lang 22.2.1953.

2. TREATMENTS:
1. Lang alone.  
2. Jowar alone.  
3. 2 rows of Lang + 1 row of Jowar.  
4. 4 rows of Lang + 1 row of Jowar.  
5. 6 rows of Lang + 1 row of Jowar.  
6. 8 rows of Lang + 1 row of Jowar.  
7. 10 rows of Lang + 1 row of Jowar.

3. DESIGN:
(i) R.B.D. (ii) (a) 7.  (b) N.A.  (iii) 2.  (iv) (a) 42' x 30' for treatment 1, 2, 3 and 5; 40' x 30' for treatment 4; 36' x 30' for treatment 6 and 44' x 30' for treatment 7.  (b) 40' x 30' for treatment 1, 2, 3 and 5; 38' x 31' for treatment 4; 34' x 30' for treatment 6 and 42' x 30' for treatment 7. (v) N.A.  (vi) Yes.

4. GENERAL:
(i) Jowar normal. Lang growth stunted. (ii) Grass hoppers and stem borer attack. Gambexene was dusted. (iii) Grain yield. (iv) (a) 1952—1955. (b) No.  (c) Nil. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Prices of Jowar and Lang received from Agricultural Officer, A.R.S., Tarcha. Jowar-Rs. 6.12 per kacha maund; Lang-Rs. 7.00 per kacha maund.

5. RESULTS:
(i) 77.78 Rs./ac.  
(ii) 5.66 Rs./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. value of produce in Rs./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12.70</td>
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<tr>
<td>2</td>
<td>189.85</td>
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<td>3</td>
<td>112.89</td>
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<td>4</td>
<td>75.50</td>
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<td>5</td>
<td>69.51</td>
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<td>6</td>
<td>45.92</td>
</tr>
<tr>
<td>7</td>
<td>38.11</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>5.66 Rs./ac.</td>
</tr>
</tbody>
</table>

Crop: Lang + Jowar (Rabi).  
Object: To study the suitability of growing Lang as a mixture with Jowar.

1. BASAL CONDITIONS:
(i) (a) Chinamag-Jowar. (b) Chinamag. (c) Nil.  (ii) (a) Black cotton soil. (b) N.A.  (iii) 28.9.1953.  
(iv) (a) N.A. (b) Drilled. (c) Lang 40 lb./ac. and Jowar 8 lb./ac. (d) Between rows 24". (e) N.A. (v) Nil. (vi) Jowar no. 8, Lang T-2-12. (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 29.55".  
2. TREATMENTS:
1. Lang alone.
2. Jowar alone.
3. Lang and Jowar in 2:1 ratio of row.
4. Lang and Jowar in 4:1 ratio of row.
5. Lang and Jowar in 6:1 ratio of row.
7. Lang and Jowar in 10:1 ratio of row.

3. DESIGN:
1.) R.B.D. (ii) (a) 3, (b) N.A. (iii) 2, (iv) 8, (v) 9. (vi) 1, (vii) 1. (viii) 6.
2.) N.A.
3.) 42'x6'. (iv) 62'x6'. (v) 50'x24', (vi) c't around.
(vi) Yes.

4. GENERAL:

S. RESULTS:
(i) 433 lb./ac.
(ii) 64.61 lb./ac.
(iii) 67.88.
(iv) 86.57.
(v) 84.3.
(vi) 117.73.
(vii) 104.54.
S.E./mean = 81.2 lb./ac.

Crop : Cotton and Paddy (Kharif).
Type : 'N'.

Objec : To study the N and P2O5 requirements with and without F.Y.M of Cotton and Paddy.

1. BASAL CONDITION:
(i) (a) Jowar-Cotton and Paddy. (b) Jowar. (c) Nil. (d) Medium black. (e) Refer soil analysis, Dabhoi.
(ii) Paddy 18.6x6.5. Cotton 15.5x15.5. (f) N.A. (g) Paddy irrigated; Cotton not irrigated. (h) Paddy 7 lb./ac. ; Cotton 5 lb./ac.
(iii) N.A. (c) Cotton 3-4 weeks before paddy; (d) N.A. (e) Cotton: 1-2 week, Paddy: 5-8 week.

2. TREATMENTS:
All combination of (1), (2) and (3).
(1) 3 levels of N as A/S+take um in the ratio of 1:1: N1=0, N2=10 and N3=63 lb./ac.
(2) 3 levels of P2O5 as Super : P0=0, PO=33 and P2=61 lb./ac.
(3) 2 levels of F.Y.M. : F0=0 and F1=5 C.L./ac.

3. DESIGN:
(i) 3x3x2 Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 62'x6'. (b) 50'x24'. (v) c't around.
(vi) Yes.

4. GENERAL:
(i) For want of rains, the paddy crop failed to attain its normal growth. (ii) Nil. (iii) Seed cotton yield only. (iv) 1952-1955. (v) No. (vi) Nil. (vii) Nil. (viii) Paddy was dilled in between two lines of cotton. For this year, Paddy crop failed completely.

5. RESULTS:
(i) 433 lb./ac.
(ii) 64.61 lb./ac.
(iii) Main effect of N and interaction N x P are highly significant. Others are not significant.
(iv) Av. yield of *kapas* in lb./ac.

<table>
<thead>
<tr>
<th></th>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>Mean</th>
<th>F₀</th>
<th>F₁</th>
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</thead>
<tbody>
<tr>
<td>P₀</td>
<td>403</td>
<td>404</td>
<td>484</td>
<td>432</td>
<td>455</td>
<td>469</td>
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<tr>
<td>P₁</td>
<td>402</td>
<td>472</td>
<td>462</td>
<td>446</td>
<td>435</td>
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<tr>
<td>P₂</td>
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<td>413</td>
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<td>473</td>
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<td>428</td>
</tr>
<tr>
<td>Mean</td>
<td>396</td>
<td>430</td>
<td>474</td>
<td>433</td>
<td>436</td>
<td>431</td>
</tr>
<tr>
<td>F₀</td>
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<td>466</td>
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<td>F₁</td>
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<td>393</td>
<td>511</td>
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</tr>
</tbody>
</table>

S.E. of marginal mean of N or P. = 13.20 lb./ac.
S.E. of marginal mean of F = 10.80 lb./ac.
S.E. of body of table N × F or P × F = 18.65 lb./ac.
S.E. of body of table N × P = 22.84 lb./ac.

**Crop**: Paddy and Cotton (*Kherif*).

**Site**: Agri. Res. Stn., Dabhoi.

**Ref**: Gj. 53(326)

**Type**: 'MX'.

Object: To study the N and P₂O₅ requirements with and without F.Y.M. of Cotton and Paddy.

1. **BASAL CONDITIONS**

   (i) (a) *Jowar*-Cotton and Paddy. (b) *Jowar*. (c) Nil. (d) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) Paddy 15.6.1953, Cotton 5.6.1953. (iv) (a) N.A. (b) Paddy drilled, Cotton sown by dibble. (c) Paddy-12 lb./ac. (d) 6' × 2' cotton. (e) Cotton 3½ seeds per dibble. (v) Nil. (vi) Paddy- *Saric*; Cotton- *Vijay*. (vii) Irrigated. (viii) 4 weedings, 8 interculturings and thinning cotton to one plant/hill. (ix) 45.25°. (x) Paddy 18.10.1953; Cotton 27.1.1954 to 22.3.1954.

2. **TREATMENTS**: All combinations of (1), (2) and (3)

   (1) 3 levels of N as A/S cake in the ratio of 1:1: N₀ = 0, N₁ = 30 and N₂ = 60 lb./ac.
   (2) 3 levels of P₂O₅ as Super: P₀ = 0, P₁ = 30 and P₂ = 60 lb./ac.
   (3) 2 levels of F.Y.M.: F₀ = 0 and F₁ = 5 C.L./ac.

3. **DESIGN**: (i) 3 × 3 × 2 Fact in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 62° × 36'. (b) 50° × 24'. (v) 6' alround. (vi) Yes.

4. **GENERAL**: (i) Normal. (ii) Nil. (iii) Paddy grain and straw; cotton seed yield. (iv) (a) 1952-1955. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Prices for cotton and paddy for Baroda Distt. taken from 'Season and Crop Report' 1953-1954, Bombay State, Table VI. Cotton—40 Rs. per Bengal maund, and paddy—14.50 Rs. per Bengal maund.

5. **RESULTS**: (i) 427 Rs./ac.
   (ii) 59.02 Rs./ac.
   (iii) Main effect of N alone is highly significant. Others are not significant.
(iv) Av. value of produce in Rs./ac.

<table>
<thead>
<tr>
<th>N₀</th>
<th>N₁</th>
<th>N₂</th>
<th>Mean</th>
<th>P₀</th>
<th>P₁</th>
</tr>
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<td>386</td>
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<td>451</td>
<td>417</td>
<td>430</td>
<td>431</td>
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<td>Mean</td>
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<td>P₁</td>
<td>398</td>
<td>408</td>
<td>458</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

S.E. of marginal mean of N or P
S.E. of the marginal mean of P
S.E. of body of table N × P
S.E. of body of table N × F or P × F

Crop: Groundnut and Maize.  
Ref.: Gj. 53(196).  
Type: 'X'.

Object: To study the effect of mixed cropping of legume and cereal in different proportions.

1. BASAL CONDITIONS:
   (i) (a) Maize (Kharif)—Gram (Rabi).  
   (b) Maize and Gram.  
   (c) Mixed crop was measured at 5 C.L./ac. of F.Y. 
   (ii) (a) Light brown.  
   (b) Refer soil analysis, Dohad.  
   (iii) N.A.  
   (iv) (a) N.A.  
   (b) Maize and groundnut drilled.  
   (c) to (e) N.A.  
   (v) Nil.  
   (vi) Spanish pepper No. 5.  
   (vii) Unirrigated;  
   (viii) 2 intercultivations.  
   (ix) 18.64'.  
   (x) N.A.

2. TREATMENTS:
   1. Groundnut alone.  
   5. Groundnut and maize in 6:1 ratio of rows.  
   6. Groundnut and maize in 8:1 ratio of rows.  

3. DESIGN:
   (i) R.B.D.  
   (ii) (a) 7.  
   (b) N.A.  
   (iii) 2.  
   (iv) (a) 30' x 35'.  
   (b) 20' x 30'.  
   (v) One row on either side and 3' on both the ends.  
   (vi) Yes.

4. GENERAL:
   (i) N.A.  
   (ii) Nil.  
   (iii) Grain yield.  
   (iv) (a) 1952—1953.  
   (b) N.A.  
   (v) (a) and (b) N.A.  
   (vi) Experiment failed in 1952.  
   (vii) Prices of Groundnut and Maize for Parch Mahal district are taken from "Season and crop report" 1953—54 Bombay State.  
   (viii) Groundnut Rs. 15.44 per Bengal maund and Maize Rs. 10.12 per Bengal maund.

5. RESULTS:
   (i) 16.24 Rs./ac.  
   (b) 5.5.10 Rs./ac.  
   (iii) Treatment differences (money value of produce) are not significant.
Object:—To study the suitability of growing Cotton as a mixture with Groundnut.

1. BASAL CONDITIONS:
   (i) (a) N.A. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) Groundnut: 14.6.1952 and cotton: 30.6.1952. (iv) (a) No ploughing and 2 to 3 harrowings. (b) Dibbling. (c) ——. (d) Between rows 3' (for all crops) and between plants—2" for groundnut and 6" for cotton. (e) One for groundnut and 2 to 3 for cotton and thinning out all but one. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Cotton—Kalyan; Groundnut—spreading type. (vii) Unirrigated. (viii) Two interculturings and two weedings. (ix) 24.11. (x) 5.11.1952, 12.1.1953 and 4.2.1953.

2. TREATMENTS:
   1. Groundnut alone.
   2. Groundnut 6 rows and cotton 2 rows.

3. DESIGN:
   (i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 50'x48'. (b) 44'x24'. (v) 3'x12'. (vi) Yes.

4. GENERAL:
   (i) Good. (ii) N.A. (iii) Kapas and pod yield. (iv) (a) 1952—1957 (modified in 1955). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) The lay out of the experiment is N.A., so analysed as R.B.D. (vii) Prices of produce collected from, G.R.S. Junagadh. Price of Cotton Rs. 0.19 per lb. and groundnut Rs. 0.25 per lb.

5. RESULTS:
   (i) 171 Rs./ac.
   (ii) 15.30 Rs./ac.
   (iii) Treatment differences are highly significant.
   (iv) Av. value of produce in Rs./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>212</td>
</tr>
<tr>
<td>2.</td>
<td>203</td>
</tr>
<tr>
<td>3.</td>
<td>171</td>
</tr>
<tr>
<td>4.</td>
<td>69</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=7.65 Rs./ac.</td>
</tr>
</tbody>
</table>
Crop : Cotton and Groundnut (Kharif).
Site : Groundnut Res. Stn., Junagadh.

Object : To study the suitability of growing Cotton as a mixture with Groundnut.

1. BASAL CONDITIONS:
   (i) (a) N.A.  (b) Jowar.  (c) N.A.  (ii) (a) Medium Black  (b) Refer soil analysis, Junagadh.  (iii) 3.6.1953.
   (iv) (a) No ploughing, 2 to 3 h rrowings.  (b) Dipping : c) N.A.  (d) Between rows 3', between plants 2' for groundnut, 6' for cotton.  (v) No of seeds per 4' for cotton and 2' for cotton planted to one.  (v) 5 C.L./ac. of F.Y.M. applied in rows 15 days before sowing.  (vi) Unirrigated.
   (b) N.A.  (vii) 2 interculturings and 3 weedicings.  (viii) 6.12.53.  (c) Groundnut 31.10.1953, cotton 2.11.1953.

2. TREATMENTS:
   1. Groundnut alone.
   2. 2 rows of groundnut and 2 rows of cotton.
   3. 6 rows of groundnut and 2 rows of cotton.

3. DESIGN:
   (i) L. S.  (ii) 4.  (b) N.A.  (iii) 4.  (iv) 6 x 15'.  (v) Yes.

4. GENERAL:
   (iv) (a) No.  (b) Drilling.  (c) 8 lb./ac. of Jowar and 20 lb./ac. of Tur.  (v) 3' x 1'.  (vi) Nil.
   (v) N.A.  (vi) N.A.  (vii) Experiment conducted as R.B.D. as the layout was N.A.  (viii) Prices of produce collected from G.R.S. Junagadh : cotton Rs 0.33 per lb. and Groundnut Rs 0.25 per lb.

5. RESULTS:
   (i) 295 Rs/acre.
   (ii) 44.92 Rs/acre.
   (iii) Treatment differences are highly significant.
   (iv) Av. value of produce Rs/acre.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>413</td>
</tr>
<tr>
<td>2</td>
<td>303</td>
</tr>
<tr>
<td>3</td>
<td>370</td>
</tr>
<tr>
<td>4</td>
<td>98</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>-22.46</td>
</tr>
</tbody>
</table>

Crop : Jowar and Tur (Kharif).

Object : To study the effect of growing Tur as a mixture with Jowar.

1. BASAL CONDITIONS:
   (i) (a) Jowar-cotton.  (b) Cotton.  (c) 5 C.L./ac. of F.Y.M.  (iii) (a) Black cotton soil.  (b) Refer soil analysis, Surat.  (iii) 9.8.1952.
   (iv) (a) N.A.  (b) Drilling.  (c) 8 lb./ac. of Jowar and 20 lb./ac. of Tur.  (d) 3' x 1'.  (e) Nil.
   (v) N.A.  (vi) N.A.  (vii) Experiment conducted as Two interculturings and one weeding.  (viii) Yes.

2. TREATMENTS:
   1. Jowar alone. Net plot size 54' x 30'.
   2. Tur alone. Net plot size 54' x 30'.
   3. Tur+Jowar mixed in the ratio of 2:1. Net plot size, 54' x 30'.
   4. Tur+Jowar mixed in the ratio of 4:1. Net plot size, 54' x 30'.
   5. Tur+Jowar mixed in the ratio of 6:1. Net plot size, 54' x 30'.
   6. Tur+Jowar mixed in the ratio of 8:1. Net plot size, 54' x 30'.
   7. Tur+Jowar mixed in the ratio of 10:1. Net plot size, 54' x 30'.

3. DESIGN:
   (i) R.B.D.  (ii) 7.  (b) N.A.  (iii) 2.  (iv) 6.  (v) N.A.  (vi) Yes.
4. GENERAL:

(i) Below normal. (ii) Severe attack of Striga on Jowar which affected the yield very much. (iii) Grain and fodder yield. (iv) 1952—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (ii) Due to attack of Striga on crops the growth was below normal and uneven. The yield of Jowar under treatment 1 was very much below normal (reasons N.A.) which was mainly responsible for significant result. Prices supplied by A.R.S, Surat: Jowar Rs. 5.30 per 40 lb. and Tur Rs. 8.25 per 40 lb.

5. RESULTS:

(i) 79.88 Rs./ac.
(ii) 21.03 Rs./ac.
(iii) Treatment differences are significant,
(iv) Av. value of produce in Rs./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>12.77</td>
</tr>
<tr>
<td>2.</td>
<td>84.70</td>
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<tr>
<td>3.</td>
<td>90.88</td>
</tr>
<tr>
<td>4.</td>
<td>101.51</td>
</tr>
<tr>
<td>5.</td>
<td>108.90</td>
</tr>
<tr>
<td>6.</td>
<td>91.56</td>
</tr>
<tr>
<td>7.</td>
<td>68.81</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>= 14.87 Rs./ac.</td>
</tr>
</tbody>
</table>

Crop:—Jowar and Tur (Kharif).
Object:—To study the effect of Tur as a mixture with Jowar.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 26.8.1953. (iv) (a) N.A. (b) Drilled. (c) Jowar 8—10 lb./ac. and Tur 2 lb./ac.

2. TREATMENTS:

1. Jowar alone. Net plot size 54'x30'.
2. Tur alone. Net plot size 54'x30'.
3. Tur and Jowar in ratio of 2 : 1 Net plot size 54'x27'.
4. Tur and Jowar in ra 4 : 1 Net plot size 54'x30'.
5. Tur and Jowar in ratio of 6 : 1 Net plot size 54'x21'.
6. Tur and Jowar in ratio of 8 : 1 Net plot size 54'x27'.
7. Tur and Jowar in ratio of 10 : 1 Net plot size 54'x33'.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) N.A. (b) As per treatments. (v) No, (vi) Yes.

4. GENERAL:

(i) N.A. (ii) Heavy attack of borer on Jowar and Tur up to 50%. (iii) Grain and fodder yield. (iv) (a) 1952—contd. (modified in 1954-1955). (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Price of Jowar Rs. 5.37 per maund and Tur Rs. 4.87 per maund

5. RESULTS:

(i) 62.52 Rs./ac.
(ii) 12.61 Rs./ac.
(iii) Treatment differences are highly significant.
(iv) Av. value of produce in Rs./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. value</th>
</tr>
</thead>
<tbody>
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<td>2.</td>
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<tr>
<td>3.</td>
<td>70.58</td>
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<tr>
<td>4.</td>
<td>56.74</td>
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<td>5.</td>
<td>55.53</td>
</tr>
<tr>
<td>6.</td>
<td>48.67</td>
</tr>
<tr>
<td>7.</td>
<td>39.26</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>= 8.92 Rs./ac.</td>
</tr>
</tbody>
</table>
Crop :- As per rotation.  
Site :- Groundnut Res. Stn., Junagadh.  
Type :- "R".

Object: To find out the best rotational system for the crops.

1. BASAL CONDITIONS:
(i) (a) and (b) As per treatments. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black 2' to 2' deep. (b) Refer soil analysis, Junagadh. (iii) 19.6.1953. (iv) (a) No ploughing, 2 to 3 harrowings. (b) Soil analysis, Junagadh. (v) 19.6.1953. (b) (a) No ploughing, 2 to 3 harrowings. (b) Between row; 3" for all crops, between plants for Groundnut 2", for cotton 6"; for Bajra and Jawar--irregular. (v) (a) No ploughing, 2 to 3 harrowings and others thinned out to one. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Groundnut-Koperpan, Cotton--Kalyan, Bajra and Jawar--local. (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 50.54". (x) 23.40. 1957 (Groundnut, 7.10.1953 (Bajra and Jawar). 5.2.1954 (Cotton).

2. TREATMENTS:
7 rotations as follows:
1. Groundnut every year.
2. Groundnut - Bajra.
5. Cotton every year.
6. Jawar every year.
7. Bajra every year.

3. DESIGN:
(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 50' > 24'. (b) 4V' x 1.: (v) 3' x 6'. (vi) No as per rotation.

4. GENERAL:
(i) Good. (ii) Tikka 5%. (iii) Grain and fodder yield. (iv) a) 1952--continued modified in 1958-59. (b) Yet, as per treatments. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment was not analysed in 1952 as it was the first year of experimentation, only mean yield in lb./ac. are given here; Cotton--315.4, Groundnut--318.6, Bajra--306.2 and Jawar--249.5.

5. RESULTS:
I. Crop : Groundnut  
(i) 1223 lb./ac. (ii) 1948 lb./ac. (iii) Treatment differences are significant. (iv) A" yield of pod in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>959</td>
<td>57.4 lb./ac.</td>
</tr>
<tr>
<td>2.</td>
<td>1377</td>
<td>57.4 lb./ac.</td>
</tr>
<tr>
<td>3.</td>
<td>1170</td>
<td>57.4 lb./ac.</td>
</tr>
<tr>
<td>4.</td>
<td>1387</td>
<td>57.4 lb./ac.</td>
</tr>
</tbody>
</table>

II. Crop : Bajra  
(i) 303 lb./ac. (ii) 47.97 lb./ac. (iii) Treatment differences are not significant. (iv) A" yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>309.8</td>
<td>33.5 lb./ac.</td>
</tr>
<tr>
<td>2.</td>
<td>320.8</td>
<td>33.5 lb./ac.</td>
</tr>
</tbody>
</table>

III. Crop : Jawar  
(i) 310.9 lb./ac. (ii) 42.21 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of ground in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>213.0</td>
<td>21.10 lb./ac.</td>
</tr>
<tr>
<td>2.</td>
<td>208.7</td>
<td>21.10 lb./ac.</td>
</tr>
</tbody>
</table>

IV. Crop : Cotton  
(i) 349.1 lb./ac. (ii) 82.97 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Av. yield</th>
<th>S.E./mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>368.4</td>
<td>42.99 lb./ac.</td>
</tr>
<tr>
<td>2.</td>
<td>329.8</td>
<td>42.99 lb./ac.</td>
</tr>
</tbody>
</table>
Crop :- Cotton-Jowar-Tur (Kharif).

Object :- To study the best rotation for the tract.

1. BASAL CONDITIONS:
   (i) (a) As per treatments. (b) Cotton. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) N.A. (iv) (a) N.A. (b) Cotton-dibbling; Jowar and Tur drilling. (c) Cotton-4-5 acres/dabble Jowar and Tur 8-10 lb./ac. (d) Cotton-6'x12'. Jowar and Tur-3'x1'.

2. TREATMENTS:
   11 rotations as follows:
   1. Cm every year.
   2. Cm—C
   3. Jm every year.
   4. Jm—J
   5. Cm—J
   6. C—T
   7. Cm—T
   8. J—T
   9. Jm—T
   10. Cm—J—T
   11. Cm—T—J

3. DESIGN:
   (i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a) 62'x30'. (b) 50'x18'. (v) 6' around.

4. GENERAL:
   (i) N.A. (ii) N.A. (iii) Yield data. (iv) (a) 1948—continued. (b) No. (as per rotation.)

5. RESULTS:
   I. Crop : Cotton.
      (i) 304 lb./ac.
      (ii) 59.77 lb./ac.
      (iii) Treatment differences are not significant.
      (iv) Av. yield of kapas in lb./ac.
         Rotation No. | Cm | Cm | Cm | Cm | Cm | Cm | Cm | Cm | Cm | Cm | Cm |
         Av. yield  | 279 | 283 | 336 | 289 | 321 | 290 | 391 | 339 |
         S.E./mean  | 24.41 lb./ac.
   II. Crop : Jowar.
      (i) 819 lb./ac.
      (ii) 152.5 lb./ac.
      (iii) Treatment differences are not significant.
      (iv) Av. yield of grain in lb./ac.
         Rotation No. | Jm | Jm | Jm | Jm | Jm | Jm | Jm | Jm | Jm | Jm | Jm |
         Av. yield    | 930 | 815 | 796 | 823 | 801 | 839 | 770 | 774 |
         S.E./mean    | 62.3 lb./ac.
   III. Crop : Tur.
      (i) 488 lb./ac.
      (ii) 104.4 lb./ac.
      (iii) Treatment differences are not significant.
      (iv) Av. yield of grain in lb./ac.
         Rotation No. | T | T | T | T | T | T | T | T | T | T | T |
         Av. yield    | 470 | 579 | 438 | 474 | 492 | 476 |
         S.E./mean    | 42.6 lb./ac.
Crop: Cotton-Jowar-Tur (Kharif).
Ref.: GI. 48(145)/48(113).
Type ‘R’

Object:—To study the best rotation for the tract.

1. BASEAL CONDITIONS:
(i) (a), (b) and (c) As per treatments. (ii) (a) Deep blue: cotton soil. (v) Refer soil analysis, Surat.
drilling. (c) N.A. (d) Cotton 6 x 2; Jowar and Tur—3 x 1. (e) N.A. (e) Nil. (i) Cotton—Suyog; Jowar—B.P. 53. (v) Undrilled. (v) 2 welds, 1 bur row and 1 inter cult to each crop. (ix) 45.42°.

2. TREATMENTS:

Details of rotations:
1. Cm every year.
2. Cm—C C = Cotton unmanured.
3. Jm every year Cm = Cotton manured with 5 C.L./ac. of P.Y.
4. Jm—J Jm = Jowar unmanured.
5. Cm—J Jm = Jowar manured with 5 C.L./ac. of P.Y.
7. Cm—T
8. J—T
9. Jm—T
10. Cm—J—T
11. Cm—T—J

3. DESIGN:
(i) R.B. D. (ii) (a) 72. (b) N.A. (iii) 6. (iv) (a) (b) 62 x 18'. (v) 6 'around. (vi) Cm (as per rotation.)

4. GENERAL:
(i) Satisfactory. (ii) Nil. (iii) Yield data. (iv) (a) 1948—N.A. (b) No, as per rotation.) (c) Nil. (v) (a) No.
 (b) N.A. (vii) and (viii) Nil.

5. RESULTS:

I. Crop: Cotton
   (i) 571 lb./ac.
   (ii) 82.35 lb./ac.
   (iii) Treatment differences are highly significant.
   (iv) Av. yield of kgs in lb./ac.

<table>
<thead>
<tr>
<th>Rotation No.</th>
<th>(1)</th>
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<tr>
<td>Crop: Cm Cm</td>
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<td>Previous crop</td>
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<td>C</td>
<td>J</td>
<td>T</td>
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<td>T</td>
</tr>
<tr>
<td>Av. yield</td>
<td>452</td>
<td>548</td>
<td>476</td>
<td>573</td>
<td>545</td>
<td>653</td>
<td>679</td>
<td>540</td>
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<tr>
<td>S.E./mean</td>
<td>=33.63 lb./ac.</td>
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</tbody>
</table>

II. Crop: Jowar.
   (i) 727 lb./ac.
   (ii) 133.9 lb./ac.
   (iii) Treatment differences are highly significant.
   (iv) Av. yield of kgs in lb./ac.

<table>
<thead>
<tr>
<th>Rotation No.</th>
<th>(1)</th>
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<td>T</td>
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<td>Cm</td>
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<tr>
<td>Av. yield</td>
<td>627</td>
<td>563</td>
<td>603</td>
<td>778</td>
<td>652</td>
<td>805</td>
<td>825</td>
<td></td>
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<tr>
<td>S.E./mean</td>
<td>=53.5 lb./ac.</td>
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</tbody>
</table>

III. Crop: Tur.
   (i) 395 lb./ac.
   (ii) 133.7 lb./ac.
   (iii) Treatment differences are not significant.
   (iv) Av. yield of kgs in lb./ac.

<table>
<thead>
<tr>
<th>Rotation No.</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
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<td>T</td>
<td>T</td>
<td>T</td>
<td></td>
<td></td>
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<tr>
<td>Previous crop</td>
<td>C</td>
<td>Cm</td>
<td>J</td>
<td>Cm</td>
<td>J</td>
<td>Cm</td>
</tr>
<tr>
<td>Av. yield</td>
<td>387</td>
<td>399</td>
<td>369</td>
<td>405</td>
<td>388</td>
<td>430</td>
</tr>
<tr>
<td>S.E./mean</td>
<td>=54.6 lb./ac.</td>
<td></td>
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</tbody>
</table>
Crop: Cotton-Jowar-Tur (Kharij).
Ref: Gj. 50(169)/48(145)/48(113).
Type: 'R'.

Object: To study the best rotation for the tract.

1. BASAL CONDITIONS:
(i) (a), (b) and (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 22. 1590. Cotton: 4. 1950 Jowar and Tur. (iv) (a) N.A. (b) Cotton dibbling; Jowar and Tur: crilling. (c) Jowar 8—10 lb. ac. Cotton: 4.5 seeds/dibble; Tur: 8—10 lb. ac. (d) Cotton: 6'x2'; Jowar: 1'x1' and Tur: 1'x1'.

2. TREATMENTS:
11 rotations as follows:
1. Cm every year.
2. Cm—C
3. Jm every year.
4. Jm—J
5. Cm—J
6. C—T
7. Cm—T
8. J—T
9. Jm—T
10. Cm—J—T
11. Cm—T—J

Details of rotations:
C = Cotton unmanured.
Cm = Cotton manured with 5 C.L./ac. of F.Y.M.
J = Jowar unmanured.
Jm = Jowar manured with 5 C.L./ac. of F.Y.M.
T = Tur unmanured.

3. DESIGN:
(i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a) 62'x30'. (b) 50'x18'. (v) 6' around. (vi) No; (as per rotation.)

4. GENERAL:
(i) Satisfactory. (ii) Stray borer attack on Jowar; Pod-borer attack on Tur. (iii) Kopas yield. (iv) (a) 1948—contd. (b) No; (as per rotation). (c) Nil. (v) (a) No. (b);—. (vi), VII and (vii) Nil.

5 RESULTS:
I. Crop: Cotton
(i) 541 lb./ac.
(ii) 65.82 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of kopas in lb./ac.
Rotation No. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)
Crop Cm Cm Cm Cm Cm Cm Cm Cm Cm Cm
Previous crop Cm C Cm Cm Cm Cm Cm Cm Cm
Av. yield 434 471 433 605 585 597 597 601
S.E./mean = 26.88 lb./ac.

II. Crop: Jowar
(i) 463 lb./ac.
(ii) 150.0 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of grain in lb./ac.
Rotation No. (3) (4) (5) (6) (7) (8) (9) (10) (11)
Crop Jm Jm Jm Jm Jm Jm Jm Jm Jm Jm
Previous crop Jm Jm Jm Jm Jm Jm Jm Jm Jm Jm
Av. yield 425 395 323 487 540 657 584 625
S.E./mean = 61.3 lb./ac.

III. Crop: Tur
(i) 322 lb./ac.
(ii) 80.68 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.
Rotation No. (6) (7) (8) (9) (10) (11)
Crop T T T T T T
Previous crop C Cm J Jm Jm Cm
Av. yield 276 307 380 298 385 288
S.E./mean = 32.94 lb./ac.
Crop :-Cotton, Jowar and Tur (Kharif). Ref :-Gj. 51(236)/50(166)/49(145)/48(113).
Type :-‘R’.

Object :-To study the best rotation for the tract.

1. BASAL CONDITIONS:
   (i) (a) to (c) As per treatments. (d) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 27.6.1951 Cotton; 21.1.1951 Jowar and Tur. (iv) (a) N.A. (b) Cotton—dibbling; Jowar and Tur drilling. (c) 4 to 5 seeds/dibble for cotton; 8 to 10 lb./ac. for Jowar and Tur. (d) 3’ x 1’ between rows for Jowar and Tur; 6’ x 2’ for cotton. (e) —. (v) Nil. (vi) Cotton- Soyag; Jowar-B.P. 53.; Tur—Local. (vii) Unirrigated. (viii) 1 thinning, 3 interculturings and 1 weeding for all crops. (ix) 30.1.52 and 23.3.1952 Cotton; 1.2 1952 Jowar and 4.3.1952 Tur.

2. TREATMENTS:
   11 rotations as follows:
   Details of rotations:
   1. Cm every year
   2. Cm—C
   3. Jm every year.
   4. Jm—J
   5. Cm—J
   6. C—T
   7. Cm—T
   8. J—T
   9. Jm—T
   10. Cm—J—T
   11. Cm—T—J
   F.Y.M. spread on 26.5.1951 and P2O5 on 12.7.1951.

3. DESIGN:
   (i) R.B.D. (ii) (a) 2 x 2 + 2 = 44. (b) N.A. (iii) 6. (iv) (a) 62’ x 30’. (b) 50’ x 18’. (v) 6’ around. (vi) No. (as per rotation).

4. GENERAL:
   (i) Yields are low due to less rains. (ii) Cotton attacked by boll worm; Tur by pod-bore; Jowar by Stem-borer. (iii) Grain yield. (iv) (a) 1949-49 (modified in 1951-52)—continued. (b) N.O. (as per rotation). (c) N.f. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment has been modified in 1951-52 by inserting application of P2O5 to legume Crop taken in rotation. All the plots in a replication are horizontally divided in two equal parts thus making 44 unit plots in a replication. Wherever legume is to be grown, out of the two plots made by this division one net plot is to be selected at random and applied with Super at 100 lb./ac. For separating the two plots unmanured and manured with P2O5 a strip of land 6’ in width is left as a border in between. This border of 6’ width is to be kept in between two plots of all the 22 treatments in a replication, thus reducing the net plot size from 50’ x 18’ to 22’ x 18’. The yields of these net plots are to be recorded separately.

5. RESULTS:
   I Crop : Cotton
   (i) 100 lb./ac.
   (ii) 19.17 lb./ac.
   (iii) Treatment differences are highly significant.
   (iv) Av. yield of kapas in lb./ac.
   Rotation No.  (1) (2) (3) (5) (7) (10) (11)
   Crop Cm Cm Cm Cm Cm Cm Cm
   Previous crop Cm Cm Cm Cm Cm Cm Cm
   Av. yield 86 103 90 118 84 91 104 121
   S.E./mean = 5.5 lb./ac.

   II Crop : Jowar
   (i) 573 lb./ac.
   (ii) 176.4 lb./ac.
   (iii) Treatment differences are significant.
   (iv) Av. yield of Jowar in lb./ac.
   Rotation No.  (3) (4) (4) (5) (8) (9) (10) (11)
   Crop Jm Jm Jm Jm Jm Jm Jm Jm Jm
   Previous crop Jm Jm Jm Jm Jm Jm Jm Jm Jm
   Av. yield 514 432 459 576 759 635 537 674
   S.E./mean = 50.9 lb./ac.
Crop: Cotton, Jowar and Tur (Kharif). Ref: Gj. 52 (274)/51(226)/56(166)/49(145)/48(113). Site: Agri. Res. Stn., Surat. Type: "R".

Object: To study the best rotation for the tract.

1. BASAL CONDITIONS:
   (i) (a) to (c) As per treatments. (ii) (a) Black Cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton 26.6.1952; Jowar and Tur 14.7.1952. (iv) (a) N.A. (b) Cotton—dibbled; Jowar and Tur—drilled. (c) Cotton 4-5 seeds/dibble; Jowar 8-10 lb./ac.; Tur 12-15 lb./ac. (d) Cotton 6'x2'; Jowar and Tur 3'x1'. (e) (f) Cotton—Suyog; Jowar B.P. 51; Tur—Local. (vii) Unirrigated. (viii) 1 thinning; 2 weedings and 3 interculturings. (ix) 1948-49 (modified in 1951-52)—continued. (b) No, as per rotation. (c) Nil. (v) (a) No. (b) N.A. (vi) Nil. (vii) Yields of plots of cotton and Jowar, where Tur is not in rotation, are converted to the common plot size of 22'x18' before analysis is taken up.

2. TREATMENTS:
   11 rotations as follows:
   1. Cm every year
   2. Cm-C
   3. Jm every year.
   4. Jm-J
   5. Cm-J
   6. C-T
   7. Cm-T
   8. J-T
   9. Jm-T
   10. Cm-J-T
   11. Cm-T-J
   Details of rotations:
   C = Cotton unmanured.
   Cm = Cotton manured with 5 C.L./ac. of F.Y.M.
   J = Jowar unmanured.
   Jm = Jowar manured with 5 C.L./ac. of F.Y.M.
   T = Tur unmanured.
   Tm = Tur manured with 100 lb./ac. of Super.

3. DESIGN:
   (i) R.B.D. (ii) (a) 44. (b) N.A. (iii) 6. (iv) (a) main-plot: 62'x30'; (b) main-plot: 50'x18' sub-plot: 22'x18'; (v) N.A. (vi) No, as per rotation.

4. GENERAL:
   (i) Good. (ii) Slight attack of pod borer on Tur; slight attack of boll worm on cotton; slight attack of striga on Jowar. (iii) Grain and kapas yield. (iv) (a) 1948-49 (modified in 1951-52)—continued. (b) No, as per rotation. (c) Nil. (v) (a) No. (b) N.A. (vi) Nil. (vii) Yields of plots of cotton and Jowar, where Tur is not in rotation, are converted to the common plot size of 22'x18' before analysis is taken up.

5. RESULTS:
   I. Crop: Cotton
   (i) 184 lb./ac.
   (ii) 52.91 lb./ac.
   (iii) Treatment differences are highly significant.
(iv) Av. yield of *kapar* in lb./ac.

<table>
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<td>Cm</td>
<td>Jm</td>
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<tr>
<td>Av. yield</td>
<td>112</td>
<td>136</td>
<td>178</td>
<td>261</td>
<td>201</td>
<td>233</td>
<td>170</td>
<td>159</td>
<td>238</td>
<td>176</td>
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<tr>
<td>S.E./mean (for 6, 7, 10)</td>
<td>21.60 lb./ac.</td>
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<tr>
<td>S.E./mean (for 7, 5, 11)</td>
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II Crop: *Jowar*

(i) 552 lb./ac.

(ii) 212.2 lb./ac.

Treatment differences are significant.

Av. yield of grain in lb./ac.

<table>
<thead>
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<tr>
<td>Crop</td>
<td>Jm</td>
<td>Jm</td>
<td>Jm</td>
<td>Jm</td>
<td>Jm</td>
<td>Jm</td>
<td>Jm</td>
<td>Jm</td>
</tr>
<tr>
<td>Av. yield</td>
<td>467</td>
<td>422</td>
<td>405</td>
<td>484</td>
<td>413</td>
<td>674</td>
<td>788</td>
<td>729</td>
</tr>
<tr>
<td>S.E./mean (for 8, 9, 11)</td>
<td>86.7 lb./ac.</td>
<td></td>
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<tr>
<td>S.E./mean (for 3, 4, 5, 10)</td>
<td>61.3 lb./ac.</td>
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</tr>
</tbody>
</table>

III. Crop: *Tur*

(i) 261 lb./ac.

(ii) 78.34 lb./ac.

(iii) Main effect of rotation is significant. Others are not significant.

Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Rotation No.</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prev. crop</td>
<td>Cm</td>
<td>Cm</td>
<td>Jm</td>
<td>Jm</td>
<td>Jm</td>
<td>268</td>
</tr>
<tr>
<td>Super</td>
<td>227</td>
<td>227</td>
<td>243</td>
<td>295</td>
<td>316</td>
<td>253</td>
</tr>
<tr>
<td>Mean</td>
<td>216</td>
<td>224</td>
<td>234</td>
<td>294</td>
<td>299</td>
<td>251</td>
</tr>
<tr>
<td>S.E. of row marginal mean</td>
<td>13.09 lb./ac.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>S.E. of column marginal mean</td>
<td>2.67 lb./ac.</td>
<td></td>
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<tr>
<td>S.E. of body of table</td>
<td>32.07 lb./ac.</td>
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</tr>
</tbody>
</table>


Object: To study the best rotation for the tract.

4. BASAL CONDITIONS:

(i) (a), (b) and (c) As per treatments. (i) (a) Black cotton. (b) Refer soil analysis, Surat. (iii) Cotton - dibbled on 19.6.1953; *Jowar* drilled on 2.8.1953; *Tur* on 29.9.1953.

(iv) (a) and (b) N.A. (c) *Jowar* drilled at 8 to 10 lb./ac. *Tur* at 12 to 15 lb./ac. Cotton at 2 to 3 lb./ac. (d) Between rows cotton 6, *Jowar* and *Tur* 3; Between plans Cotton—2, *Jowar* and *Tur*—1. (e) N.A. (v) Nil. (vi) Cotton-Soyag, *Jowar*-B P. 53; *Tur*-Local. (vii) Unirrigated. (viii) Thinning Cotton on 31.7.1953 and 28.8.1953; *Jowar* on 29.9.1953; *Tur* on 28.8.1953; Weeding on 19.7.1953; 28.8.1953 for Cotton and 9.9.1952, 12.10.1953 for *Jowar* and *Tur*, 10.3.1954; (x) 58.00°; (xi) Cotton on 10, 27.3.1954; *Jowar*-9.2.1954; *Tur*-15.3.1954.

2. TREATMENTS:

11 rotations as follows:

1. Cm every year.
2. Cm—C
3. Jm—J
4. Jm—C
5. Cm—J
6. C—T
7. Cm—T
8. J—T
9. Jm—T
10. Cm—J—T
11. Cm—T—J

Details of rotations:

- Cotton—Cotton unmanured.
- Cm—Cotton manured with 5 C.L./ac. of F.Y.M.
- Jm—Jowar unmanured.
- J—Jowar manured with 5 C.L./ac. of F.Y.M.
- T—Tur unmanured.
- Tm—Tur manured with 100 lb./ac. of Super.

3. DESIGN:
(i) R.B.D. (ii) (a) 44. (b) N.A. (iii) 6. (iv) (a) 62’x30’. (b) 50’x18’. For tur—gross : 31’x30’. net : 22’x18’. (v) 6’ all round the net plot. For tur: 6’ on either side and 5’ at one end and 3’ at another. (vi) No, as per rotation.

4. GENERAL:
(i) Normal. (ii) Cotton-boll worm attack; Jowar-heavy attack of borer due to which Jowar yield was below normal. Tur-heavy attack of pod borer. (iii) Seed-cotton; tur-pods, jowar-grain. (iv) (a) 1949—1549. (Modified in 1951—1952)—continued. (b) No, as per rotation. (c) N.A (v) (a) and (b) No. (vi) and (vii) Refer Gj. 51(236).

5. RESULTS:
I. Crop : Cotton
(i) 682 lb./ac.
(ii) 93.51 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of kapas in lb./ac.

<table>
<thead>
<tr>
<th>Rotation No.</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
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<td>Cm</td>
<td>Cm</td>
<td>Cm</td>
<td>J</td>
<td>T</td>
<td>Tm</td>
<td>T</td>
<td>Tm</td>
<td>Tm</td>
<td>T</td>
<td>J</td>
</tr>
<tr>
<td>Previous crop</td>
<td>Cm</td>
<td>Cm</td>
<td>Cm</td>
<td>J</td>
<td>Jm</td>
<td>J</td>
<td>Jm</td>
<td>J</td>
<td>Jm</td>
<td>J</td>
<td>J</td>
</tr>
<tr>
<td>Av. yield</td>
<td>552</td>
<td>534</td>
<td>575</td>
<td>628</td>
<td>820</td>
<td>909</td>
<td>905</td>
<td>865</td>
<td>855</td>
<td>785</td>
<td>600</td>
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<tr>
<td>S.E./mean</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>26.99</td>
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</tr>
</tbody>
</table>

II. Crop : Jowar
(i) 337 lb./ac.
(ii) 158.0 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Rotation No.</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
<th>(11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop</td>
<td>Jm</td>
<td>Jm</td>
<td>Jm</td>
<td>J</td>
<td>J</td>
<td>Jm</td>
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<td>Jm</td>
<td>J</td>
</tr>
<tr>
<td>Previous crop</td>
<td>Jm</td>
<td>Jm</td>
<td>Jm</td>
<td>Cm</td>
<td>Tm</td>
<td>T</td>
<td>Tm</td>
<td>T</td>
<td>Tm</td>
</tr>
<tr>
<td>Tm</td>
<td>Tm</td>
<td>Tm</td>
<td>Tm</td>
<td>Cm</td>
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<td></td>
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</tr>
<tr>
<td>Av. yield</td>
<td>292</td>
<td>127</td>
<td>157</td>
<td>362</td>
<td>449</td>
<td>479</td>
<td>413</td>
<td>378</td>
<td>579</td>
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<tr>
<td>S.E./mean</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>64.5</td>
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<td></td>
<td>45.6</td>
</tr>
</tbody>
</table>

III. Crop : Tur
(i) 150 lb./ac.
(ii) 40.54 lb./ac.
(iii) Only main effect of rotations is highly significant. Others are not significant.
(iv) Av. yield of grain in lb./ac.

<table>
<thead>
<tr>
<th>Rotation No.</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
<th>(11)</th>
<th>Mean</th>
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</thead>
<tbody>
<tr>
<td>Previous crop</td>
<td>C</td>
<td>Cm</td>
<td>J</td>
<td>Jm</td>
<td>J</td>
<td>Jm</td>
<td>Cm</td>
</tr>
<tr>
<td>Super</td>
<td>121</td>
<td>119</td>
<td>133</td>
<td>186</td>
<td>174</td>
<td>160</td>
<td>149</td>
</tr>
<tr>
<td>No Super</td>
<td>117</td>
<td>162</td>
<td>135</td>
<td>149</td>
<td>174</td>
<td>165</td>
<td>150</td>
</tr>
<tr>
<td>Mean</td>
<td>119</td>
<td>141</td>
<td>134</td>
<td>168</td>
<td>174</td>
<td>163</td>
<td>150</td>
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<tr>
<td>S.E. of row marginal mean</td>
<td>6.76 lb./ac.</td>
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<tr>
<td>S.E. of column marginal mean</td>
<td>11.70 lb./ac.</td>
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<td>S.E. of body of table</td>
<td>16.55 lb./ac.</td>
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